Wilson, Kevin

From: Debra.Rosen@dot.gov
Sent: Friday, October 09, 2009 3:31 PM
To: Gorman, Karen
Cc: McMullen, Catherine; Wilson, Kevin; Judy.Kaleta@dot.gov; Thomas.Black@dot.gov
Subject: FW: FW: OSC File Nos. DI-08-0497; DI-08-0550; DI-08-0494
Attachments: DTW ATCT SOW.doc; DTW ATCT Microbiological 080808.pdf; ES_tripreport.pdf; Health Survey Intro.pdf; mold_responses_osc.doc

Dear Karen: Please find attached our response (entitled "mold responses osc.doc") to the questions you have identified as you continue your reasonableness review relating to the subject OSC referral. Also attached are documents referenced in the response. Please feel free to contact me if you have any further questions.

Sincerely,

Debra J. Rosen
Senior Attorney
Office of General Counsel, C-10
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590
(202) 366-9165

From: Gorman, Karen [mailto:kgorman@osc.gov]
Sent: Tuesday, September 08, 2009 11:41 AM
To: Kaleta, Judy (OST); Rosen, Debra (OST)
Cc: Wilson, Kevin; McMullen, Catherine
Subject: OSC File Nos. DI-08-0497; DI-08-0550; DI-08-0494

Judy/Debra: As we are finalizing our review of the DOT report and the supplemental report in the above-referenced matters, we have identified some questions that are central to our determination whether the findings of the agency head are reasonable. 5 U.S.C. Section 1213(e)(2)(a). Below are the specific questions covering three separate topics; we are available at your convenience to discuss this with you if that would be helpful. We would appreciate a response within the next 30 days. Because of the nature of the questions, it is anticipated that a second supplemental report will need to be issued. Again, let us know if you have any questions or wish to discuss this.

Topic 1: Policies regarding the report of work-related health and medical problems

In the February 11, 2009, DTW: OST Recommendation Tracking Sheet (Tracking Sheet), which was contained in the supplemental report, one of the addressed recommendations was to "[r]eview the policies at FAA's Detroit Air Traffic Control Tower to ensure that employees are encouraged to report work-related health and medical problems." The status for this item indicated that it had been completed on October 1, 2008, and that local managers have reviewed the FAA's policies. We are requesting more specific information regarding the status of this recommendation. Specifically, we would like to know:

- What were the names of the local managers who performed this review?
- What steps were taken in the review?
- What changes, if any, were made to the policies?
- If no changes were made to the policies, what was the basis for that decision?
- If changes were made to the policies, why were they made and what information was considered in making the changes?

- The status for this recommendation referred to Sections C and L for additional information. Sections C and L of the Tracking Sheet refer to a living document, also known as the DTW Project Communication Plan. The September 25, 2008, version of the DTW Project Communication Plan was included in the supplemental report. Our review of this document found no references to the encouragement of employees to report health or medical concerns. What information was the sentence "[r]efer to Sections C and L for additional information" meant to convey with respect to the reporting of work-related health and medical problems?

Topic 2: Employee Health Survey

In your March 20, 2009, e-mail, you responded to our request that an employee health survey be conducted on the employees in the DTW air traffic control tower. You indicated "that it would not be beneficial to conduct such a survey at this point." You explained that these surveys are typically conducted when people are ill and the source of the problem is unknown. You neither disputed the existence of mold or moisture problems, nor did you dispute the employees' health concerns. However, your "investigation did not establish a direct link between the mold at the facility and employee health [as] stated in Finding no. 2 in the report . . . ." Volume 2 of Applied Environmental, Inc.'s ATCT Mold/Water Incursion Inspections Final Report, included the July 15, 2008, version of the Investigation of Mold and Moisture at the Federal Aviation Administration Detroit Metropolitan Air Traffic Control Tower Facility, referred to by the agency as the OST Investigative Report. In the agency's original report, dated October 22, 2008, an August 21, 2008, version of the OST Investigative Report was included. The July 15, 2008, version includes a recommendation, Paragraph I, that was deleted from the August 21, 2008 version. This recommendation states:

"**Conduct an employee health symptom survey to provide an opportunity for employees working at the facility to openly express their health and medical symptoms without fear.** This survey should be conducted by an agency independent of the FAA, such as NIOSH, Federal Occupational Health, or a local occupational health clinic. This survey may be useful in identifying groups of ill employees working in an identical location or with similar health symptoms. As a result of the survey, any employees expressing health symptoms should be encouraged to seek medical attention from an appropriate physician. A follow-up health survey should be conducted after the mold remediation and moisture problems have been corrected to document if employee health problems have improved. Ideally, there should be a correlated reduction in the employee health symptoms after mold and moisture have been removed from the facility." (emphasis in original).

Specifically, we would like answers to the following questions to reconcile your March 20, 2009, e-mail with the July 15, 2008, OST Investigative Report:

- Who drafted the July 15, 2008, OST Investigative Report and why was the above-referenced recommendation initially included?
- Who deleted or ordered the deletion of the recommendation to conduct an employee health survey from the August 21, 2008, version?
- Why was this paragraph deleted?
- What happened between July 15, 2008, and August 21, 2008, that caused the agency to change its belief that remediating the mold and moisture problems would "ideally" cause a reduction in the employee health symptoms?
- Does the agency still stand by its statement that there is no linkage between the mold in the facility and employee health?
- If so, how does the agency reconcile that statement with the July 15, 2008, OST Investigative Report?

Topic 3: The June 9-June 12, 2008 Inspection

We also have questions regarding the inspection between June 9 and June 12, 2008 (June 2008 inspection), that was mentioned in footnote 2 on page 9 of the August 21, 2008, OST Investigative Report. Specifically, we would like to know:

- In which locations was additional mold contamination found during the June 2008 inspection?
- What was the extent of the mold contamination found in each of these locations?
- Was each floor of the Tower inspected?
- Why were the results of this inspection different from the inspection done pursuant to the OSC referral?
- Why were detailed results of the June 2008 inspection not included in the OST Investigative Report, the

FAA's Response or former Secretary Peters' letter?

- Was a report prepared after the June 2008 inspection? If so, please forward to us a copy of that report as well as any other documentation necessary to a full understanding of the issues presented in that report, including actions taken in response to the June 2008 inspection.
- If a report was not prepared, why it was not done? Please include whatever information, such as memoranda, that were used to document the results of the inspection as well as any other documentation necessary for a full understanding of the issues presented in such documents, including actions taken in response.

Karen P. Gorman
Deputy Chief
Disclosure Unit
U.S. Office of Special Counsel
1730 M Street, N.W., Suite 218
Washington, D.C. 20036
202-254-3677 office
202-255-1849 blackberry
kgorman@osc.gov

DOT Response to OSC Questions

October 9, 2009

I. OSC Topic No. 1

Policies regarding the report of work-related health and medical problems

In the February 11, 2009, DTW: OST Recommendation Tracking Sheet (Tracking Sheet), which was contained in the supplemental report, one of the addressed recommendations was to "[r]eview the policies at FAA's Detroit Air Traffic Control Tower to ensure that employees are encouraged to report work-related health and medical problems." The status for this item indicated that it had been completed on October 1, 2008, and that local managers have reviewed the FAA's policies. We are requesting more specific information regarding the status of this recommendation. Specifically, we would like to know:

- *What were the names of the local managers who performed this review?*
- *What steps were taken in the review?*
- *What changes, if any, were made to the policies?*
- *If no changes were made to the policies, what was the basis for that decision?*
- *If changes were made to the policies, why were they made and what information was considered in making the changes?*
- *The status for this recommendation referred to Sections C and L for additional information. Sections C and L of the Tracking Sheet refer to a living document, also known as the DTW Project Communication Plan. The September 25, 2008, version of the DTW Project Communication Plan was included in the supplemental report. Our review of this document found no references to the encouragement of employees to report health or medical concerns. What information was the sentence "[r]efer to Sections C and L for additional information" meant to convey with respect to the reporting of work-related health and medical problems?"*

Response to Topic No. 1

FAA has several existing policies and federal regulations to encourage employees to report unsafe and unhealthful work conditions. Chapter 1 of FAA Order 3900.19B (FAA Occupational Safety and Health Program) requires all FAA employees to "Promptly report unsafe and/or unhealthful working conditions, situations, work-related injuries, illnesses, and accidents to supervisors." Sick leave policies are documented in national FAA regulations and bargaining unit agreements. Based upon review of FAA policy and its agreements with labor organizations, FAA management (Joseph Figliuolo, Motown District Manager and Dave Sanders, Acting Eastern Michigan GNAS Manager) found its policy and labor agreements supported an environment at the Detroit Air Traffic Control Tower (DTW ATCT) which encouraged employees to report safety and health concerns. Management also found that employees consistently communicated work-related medical

and health issues to management based upon FAA policy and its labor agreements (e.g., CA1s, CA2s, meetings, etc.).

Regarding the reference to the DTW Project Communication Plan, it provides, "Employees may contact their supervisor if any questions or concerns arise before or during the project." This statement was intended to capture a wide range of project-related occupational safety and health (OSH) concerns. Although not specifically stated, the reporting of health issues associated with a project would be considered an OSH concern. When the communication plan was implemented during the DTW base building roof project, it provided an additional venue (meetings) for employees to raise and discuss safety concerns or other issues relating to projects ongoing at the facility. Management frequently encouraged employees to attend these meetings and raise concerns/issues relating to safety at these meetings. However, outside of the people involved in executing the project and labor representatives, management does not recall any other employees attended any of these meetings.

Moreover, it is noteworthy that a number of changes have taken place since the inspection conducted by the Office of the Secretary (OST) in May 2008. The most significant change is the collaborative relationship between FAA and the unions in addressing the mold and moisture intrusion issues.

Health Survey

In continuing efforts towards building a collaborative relationship, one of the mutually agreed items was for a health survey to be conducted at DTW. As a member of the DTW Integrated Team, Dr. Eugene C. Cole, will be conducting the health survey. Quantitative and qualitative studies will be conducted by Dr. Cole and an independent review board. Details of the plan can be found in the attachment developed by Dr. Cole and currently under review by FAA Human Resources and the Office of Chief Counsel. Current and former DTW employees will be interviewed, including the control group for comparison. The bargaining units have requested this survey, and are participants in the DTW Integrated Team process and will have the opportunity to approve the survey questions. It is anticipated that the survey document will be approved by the end of October and that it will be disseminated shortly thereafter.

A summary of other collaborative events that have taken place include the following:

> **On January 29, 2009**, Hank Krakowski (COO), Steve Zaidman (ATO-W), Dr. Fred Tilton (Aerospace Medicine), and CSA management visited DTW ATCT and facility employees and determined that FAA would start fresh on the inspection and remediation effort. FAA canceled the awarded remediation plan and agreed to coordinate with the bargaining union to plan all future efforts at the facility.
>
> **On March 18, 2009**, FAA management and Bargaining Union representatives met and discussed the future effort at DTW. The agreement from this meeting included a joint effort by FAA and the Bargaining Union to provide a list of

qualified persons to assist in an evaluation of the complete facility (DTW ATCT, base building, and HVAC system), evaluate the engineering causes of the mold and water intrusion, and remediate any findings with appropriately trained personnel. The consultants (DTW Integrated Team) would develop the plans and methodology for the assessment under the direction of a lead Certified Industrial Hygienist (CIH). FAA agreed to allow the Bargaining Union funded technical liaison, Wonder Makers Environmental, to observe and participate in all phases of the assessment planning and remediation effort.

On March 31, 2009, FAA and the Bargaining Union agreed to a consultant team and initiated the Integrated Team contract phase. Over the next four months, FAA implemented a contract vehicle, obtained initial funding, developed the project scope of work, subcontracted with the preferred consultants, and coordinated the initial kickoff meeting.

On July 21-23, 2009, Integrated Team, Bargaining Union, and FAA have the initial kickoff meeting at DTW to begin initial site assessment and planning.

On August 17, the Integrated Team's Doctor of Public Health provided to FAA, the Draft Employee Health Survey. (Intro. Attached) Human Resources/Labor Relations and Chief Counsel's Office will review the survey to ensure compliance with bargaining union contracts and regulatory requirements for confidentiality. FAA anticipates the Doctor of Public Health will complete the employee health survey over the next couple of months.

On August 20 - September 18, 2009, the Integrated Team implemented their developed comprehensive background mold and contaminants sampling plan, building envelop and engineering evaluation, and heating, ventilation, and air conditioning (HVAC) evaluation.

II. OSC Topic No. 2

Employee Health Survey

In your March 20, 2009, e-mail, you responded to our request that an employee health survey be conducted on the employees in the DTW air traffic control tower. You indicated "that it would not be beneficial to conduct such a survey at this point." You explained that these surveys are typically conducted when people are ill and the source of the problem is unknown. You neither disputed the existence of mold or moisture problems, nor did you dispute the employees' health concerns. However, your "investigation did not establish a direct link between the mold at the facility and employee health [as] stated in Finding no. 2 in the report . . . ." Volume 2 of Applied Environmental, Inc.'s ATCT Mold/Water Incursion Inspections Final Report, included the July 15, 2008, version of the Investigation of Mold and Moisture at the Federal Aviation Administration Detroit Metropolitan Air Traffic Control Tower Facility, referred to by the agency as the OST Investigative Report. In the agency's original

report, dated October 22, 2008, an August 21, 2008, version of the OST Investigative Report was included. The July 15, 2008, version includes a recommendation, Paragraph I, that was deleted from the August 21, 2008 version. This recommendation states:

> *"**Conduct an employee health symptom survey to provide an opportunity for employees working at the facility to openly express their health and medical symptoms without fear.** This survey should be conducted by an agency independent of the FAA, such as NIOSH, Federal Occupational Health, or a local occupational health clinic. This survey may be useful in identifying groups of ill employees working in an identical location or with similar health symptoms. As a result of the survey, any employees expressing health symptoms should be encouraged to seek medical attention from an appropriate physician. A follow-up health survey should be conducted after the mold remediation and moisture problems have been corrected to document if employee health problems have improved. Ideally, there should be a correlated reduction in the employee health symptoms after mold and moisture have been removed from the facility." (emphasis in original).*

Specifically, we would like answers to the following questions to reconcile your March 20, 2009, e-mail with the July 15, 2008, OST Investigative Report:

- *Who drafted the July 15, 2008, OST Investigative Report and why was the above-referenced recommendation initially included?*
- *Who deleted or ordered the deletion of the recommendation to conduct an employee health survey from the August 21, 2008, version?*
- *Why was this paragraph deleted?*
- *What happened between July 15, 2008, and August 21, 2008, that caused the agency to change its belief that remediating the mold and moisture problems would "ideally" cause a reduction in the employee health symptoms?*
- *Does the agency still stand by its statement that there is no linkage between the mold in the facility and employee health?*
- *If so, how does the agency reconcile that statement with the July 15, 2008, OST Investigative Report?*

Response to Topic No. 2

As explained in the March 20, 2009, email, we carefully considered the question of whether to conduct a health survey and, as you note, the recommendation was included in an earlier version of our investigative report. As previously advised, the Office of the Secretary (OST), considered asking the National Institute for Occupational Safety and Health (NIOSH) to conduct the survey. During our investigation, OST consulted with NIOSH Office of Respiratory Disease Studies regarding the DTW air traffic control tower. NIOSH indicated that a team of epidemiologists and medical officers sometimes get involved to interview employees and gather data from questionnaires when people are

having health issues. Such an employee questionnaire is usually conducted when the source of the problem is unknown. Tom Black, the Department's Safety and Occupational Health Manager, informed NIOSH that areas of mold and moisture had been identified and that FAA was in the process of implementing a plan to remove the mold and prevent moisture intrusion. At that time, NIOSH indicated a survey was not needed since problems were already identified at the facility and the Department was already aware that some employees had indicated health related concerns. NIOSH emphasized that the important element was to correct moisture sources and remediate molded materials. NIOSH did indicate that employees working at the facility should have a way to report any future illnesses that they believe may be attributed to indoor air quality problems. Thus, based on consultation with NIOSH's experts, we determined that the most prudent use of resources would be to focus on remediation. Also, as we noted in the report, FAA was already in the process of developing a questionnaire to obtain health information from employees at Detroit. Subsequently, as discussed above under Topic No. 1, in conjunction with the union, FAA has decided to conduct a health survey.

Regarding the July 15, 2008 investigative report, it was not the final report and we are unclear as to how or why it was attached to the ATCT Report. In any event, given Mr. Black's discussions with NIOSH concerning the usefulness of conducting a health survey, and after careful reconsideration, OST decided to take the health survey recommendation out of the draft report for the reasons explained above. Both versions of the report were prepared by OST. The decision to include the recommendation was made by OST and the decision to remove the recommendation was made by OST as well. Thus, OST's determination not to recommend a survey was a reasonable decision based upon a determination that the most prudent use of resources would be to focus on remediation. However, given FAA's independent decision to conduct a health survey, the matter is actually a moot point.

Regarding the linkage question between mold and employee health, this was also explained in the email of March 20, 2008. The email does not state "there is no linkage between the mold in the facility and employee health". Rather, the email states *"there is no legal or regulatory standards or limits for determining mold exposure, making it very difficult to establish a link between adverse health effects and mold. Moreover, mold was found at the facility in unoccupied areas and we determined that the tower elevator shaft was not a conduit for mold spores to travel within the facility since the air monitoring that was done by an independent Industrial Hygienist did not show elevated mold spore concentration within any occupied areas of the tower or base building. Indeed mold spore concentrations within the tower cab were much lower than that found outdoors. For all these reasons, we could not* ***directly*** *link the mold to the employees' health issues, although at the same time we did not want to invalidate the employees' health concerns."* We don't believe there is any inconsistency with this statement and the language in the first version of the report which simply described a health survey scenario in general. This is not an exact science and as noted in the March 20 email: *Regardless, it is clear that the mold and moisture problems at the facility must be fully remediated and the focus of our report was on ensuring complete remediation as well as open communication with*

employees and ensuring that employees are encouraged to report work related health problems." We believe this is a reasonable approach and we stand by that statement as the overall concern of our investigation.

III. OSC Topic No. 3

The June 9-June 12, 2008 Inspection

We also have questions regarding the inspection between June 9 and June 12, 2008 (June 2008 inspection), that was mentioned in footnote 2 on page 9 of the August 21, 2008, OST Investigative Report. Specifically, we would like to know:

- *In which locations was additional mold contamination found during the June 2008 inspection?*
- *What was the extent of the mold contamination found in each of these locations?*
- *Was each floor of the Tower inspected?*
- *Why were the results of this inspection different from the inspection done pursuant to the OSC referral?*
- *Why were detailed results of the June 2008 inspection not included in the OST Investigative Report, the FAA's Response or former Secretary Peters' letter?*
- *Was a report prepared after the June 2008 inspection? If so, please forward to us a copy of that report as well as any other documentation necessary to a full understanding of the issues presented in that report, including actions taken in response to the June 2008 inspection.*
- *If a report was not prepared, why it was not done? Please include whatever information, such as memoranda, that were used to document the results of the inspection as well as any other documentation necessary for a full understanding of the issues presented in such documents, including actions taken in response."*

Response to Topic No. 3

Background: The June 9-12, 2008 inspection was conducted by FAA, independent from the OST inspection which was conducted pursuant to the OSC referral. In conducting its own follow-up inspection, FAA was attempting to be proactive and to initiate steps to conduct a complete and thorough remediation. Floors 2-10 of the ATCT were inspected. FAA intended to use the inspection results to develop a detailed scope of work (SOW) for the tower remediation projects. Thus, the attached SOW is the formal product of the June 2008 inspection. It identified the materials that needed to be removed, their locations, methodologies to be utilized and other protocol. NATCA representatives were present during this June survey. The SOW not only identified the location of the mold and how much needed to be removed but it also provided an actual plan to remediate it. The results of the inspection were not included in OST's report because we considered the FAA initiative to be separate from the OST investigation, although we did note its occurrence in the report (see f.n. 2 of Report).

Based on the June 2008 survey, mold was found in the following areas:

Room 1028 North Wall - numerous suspect spots could be seen from the access panel on the inner shaft liner wall. Nothing was visible on any other walls or elevator shaft walls within the room.

928 North and West Walls in the northwest corner of the room - mold was found on the outer layer, middle layer, and shaft liner. Approx. 6 square feet.

928 South elevator shaft wall - mold was found on the middle layer and shaft liner. Approx. 6-8 square feet.

928 East elevator shaft wall - mold was found on the outer layer, middle layer and shaft liner. Approx. 6-8 square feet.

829 East wall - suspect staining was found on the outer layer.

728 South and East elevator shaft walls - suspect staining was found on the outer layers.

628 South and East elevator shaft walls - suspect staining was found on the outer layers.

Room 527 North wall - mold was found in the northeast corner of the room. Approx. 3 square feet.

Room 527A South wall - mold was found in the southeast corner of the room. Approx. 2 square feet.

Room 529 East wall - suspect staining was found on the outer layer.

428 South and East elevator shaft walls - mold was found on the shaft liner. Approx. 4-6 square feet.

Rooms 927, 827, 727, 627, 527, 427, and 327 - Stained and damaged pipe insulation was found.

Other facility surveys have taken place and include the following:

- A separate visual inspection for water intrusion/condensation was performed by the FAA's Engineering Services on June 12, 2008. Refer to the attached trip report for additional information.
- A follow-up mold investigation was performed at DTW in December 2008. The initial remediation/restoration package was being modified based upon these findings, however, the awarded contract was later cancelled. Refer to the FAA responses for Topic #1 for additional information.
- Another facility survey is currently taking place at DTW. Refer to the FAA responses for Topic #1 for additional information.

STATEMENT OF WORK

MICROBIOLOGICAL REMEDIATION
FOR
FEDERAL AVIATION ADMINISTRATION
DETROIT METROPOLITAN WAYNE COUNTY
AIRPORT TRAFFIC CONTROL TOWER (DTW ATCT)
DETROIT, MICHIGAN

1.0 WORK SUMMARY. The Contractor is required to furnish all labor, materials, services, equipment, insurance, and perform all the work to remove and dispose of all microbiological contaminated materials (MCM) and microbiological contaminated elements (MCE) described in this Statement of Work (SOW). The Contractor shall be responsible for the cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT Rooms 928, 527, 527A, and 428 in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (See Attachment 1). Included in the scope of work is the removal of any MCM between the bottom metal runner/track and the concrete floor; between the top metal runner/track and the structural deck; and between the metal stud and exterior concrete wall. The Contractor shall minimize dust generation and use the methodologies outlined in GARFIE for dust prevention and suppression. Prior to performing microbiological remediation procedures, the Contractor shall seal all critical penetrations and openings to the work area with a minimum of two layers of 6-mil polyethylene, and shall be responsible for ensuring adjoining areas are not exposed to the microbiological contamination during the remediation. The Contractor shall provide additional cleaning procedures and pipe insulation removal/replacement as described herein in Rooms 1028, 927, 829, 827, 728, 727, 727A, 628, 627, 529, 527, 427, 328, and 327. A complete list of the work required is included in Section 7.0 Work Procedure and the Supplemental Statement of Work (SSOW). All removals and other cleaning procedures shall be conducted at night between the hours of 6:00 PM and 6:00 AM. Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the building. See the SSOW for additional work required to perform the remediation work and to restore the facility.

1.1. CONTRACTOR'S RESPONSIBILITY. The Contractor shall perform all work required to give a complete and satisfactory job as required by this Statement of Work. The Contractor shall be responsible for performing this work in accordance with GARFIE. The Contractor shall perform the work per the schedule and sequence identified in the SSOW. The Contractor shall be responsible for all

debris generated under this contract at the job site and during transport of microbiological containing or contaminated materials to an approved disposal site.

1.1.1 Site Visit. The Contractor is responsible for inspecting the work space and field verifying all quantities for: constructing a negative pressure enclosure for each phase of the work, MCM, MCE removal and disposal, work area physical parameters, access limitations, and Government phasing limitations. The Contractor shall be required to work around existing furniture, fixtures and finishes during the performance of this contract. The site visit shall be scheduled by the Government for interested microbiological remediation Contractors to identify specific work area and phasing requirements.

1.1.2 Property Damage. The Contractor shall take all precautions to avoid damage to Government property or equipment. Any damage to Government property or equipment by the Contractor shall be repaired by the Contractor to its original state or better condition at no additional expense to the Government.

1.1.3 Working Conditions. Portions of the ATCT will be occupied and Government operations will continue on a normal, temporary, or restricted basis for the duration of the project. The Contractor shall take all precautions to ensure that their operations are conducted in a manner that does not interfere with the normal operations of the surrounding facilities and the safety and health of the occupants or the environment. Contractor's personnel will have limited access to the facility.

1.1.4 Cleanup. Upon completion of the work at the site, all staging and debris from the project shall be removed from the site and disposed of properly. The entire area shall be left clean and acceptable to the Government.

1.1.5 Certifications. The Contractor shall be certified by the Indoor Air Quality Association (IAQA), the Institute of Inspection, Cleaning, and Restoration (IICR), the National Duct Cleaning Association (NADCA) or equivalent.

1.2. SCHEDULE. See contract documents for duration of contract and notice to proceed.

1.2.1 Pre-Construction Meeting. The Contractor shall attend a mandatory pre-construction meeting before starting work and the Government will schedule the meeting.

1.3. TEMPORARY FACILITIES AND STAGING AREA. The electrical energy and the water consumed shall be provided by the Government at no cost to the Contractor from existing lines and sources located in the ATCT or from services adjacent to the work areas. Contractor's use of utilities shall be coordinated with the Government. Contractor is responsible for ensuring that adequate electrical power and water are available to complete the work. The Contractor will be

permitted to use the areas as directed by the Government for staging and storage of materials. The area is restricted to uncontaminated work equipment and supplies. The area shall be left clean and restored to the same condition as when accepted by the Contractor.

1.4. SUBMITTAL REQUIREMENTS. The Contractor shall submit the following additional documents prior to starting work.

- Material Safety Data Sheets for all chemical products.
- Respiratory Fit Test and Medical Surveillance for employees scheduled for this project.
- Negative Air HEPA Filtration Equipment Specification Sheet
- Proposed Phasing Schedule.

2.0 MEDICAL REQUIREMENTS. Contractor shall provide medical surveillance and have a written Respiratory Protection program in place as required by OSHA 29 CFR 1910.134 for all personnel engaged in the removal and demolition of MCM and MCE. Respirators and filters provided shall be NIOSH approved and provide the appropriate level of protection.

3.0 PROTECTIVE CLOTHING. Contractor shall provide workers and government representatives with sufficient sets of protective full body clothing. Such clothing shall consist of full body coveralls including head covers, foot covers and hand covers. Contractor shall provide additional personal protection safety equipment as required by applicable OSHA safety regulations. Contractor shall ensure that all employees who will conduct mold remediation activities are provided with, fit tested for, and trained in the correct use of personal protection equipment.

4.0 REMEDIATION AREA. Contractor shall establish a remediation area and restrict the access to the microbiological work areas during work conducted in the ATCT. Contractor shall establish a roped-off perimeter and provide warning barrier tape and signs outside the perimeter of the negative pressure enclosure system. Contractor shall establish a negative pressure enclosure system by sealing all critical penetrations or openings to the work area with a minimum of two layers of six-mil polyethylene. Negative pressure enclosures shall have a minimum of four air exchanges per hour and shall be maintained and recorded with a magnehelic guage or equivalent device under a minimum negative pressure differential of -0.02 inches of water relative to adjacent non-work area space. Negative air pressure equipment shall be equipped with a HEPA filter and exhaust shall be discharged outside the building, a minimum of 25 feet from building access points and building make-up air sources, or wherever necessary, negative air pressure equipment shall be equipped with a HEPA filter and exhaust shall be discharged through a second HEPA filter in order to permit recirculation of air inside the building. Personnel shall wear and utilize protective clothing and equipment in the remediation area as specified herein.

5.0 DECONTAMINATION AREA. Contractor shall establish a decontamination unit for passage to and from the work area during remediation operations in order to minimize the leakage of mold-contaminated dust to the outside. This unit shall consist of a minimum of

two chambers, including a clean room and equipment room separated by airlocks. The airlocks shall be formed by overlapping three sheets of 6-mil polyethylene sheeting at the exit of one room and three sheets at the entrance to the next room, with three feet of space between the barriers. Airlocks shall be constructed to effectively maintain negative pressure while not inhibiting worker egress is an emergency situation.

6.0 WORKER PROTECTION PROCEDURE.

6.1. Each worker and authorized visitor shall, upon entering the job site, put on appropriate respirator and clean protective clothing, before entering the work area.

6.2. Each worker and authorized visitor shall remove gross contamination from clothing by HEPA vacuuming, prior to leaving the remediation work area. After decontamination of protective clothing, while still wearing the respirator, remove protective clothing and dispose as microbiological waste, as appropriate, in a drum or two layers of 6-mil polyethylene disposal bags.

6.3. Workers shall not eat, drink, smoke, or chew gum or tobacco at the work site. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of MCM or MCE and until final cleanup is completed.

7.0 WORK PROCEDURE.

7.1. Moisture damage restoration and mold remediation shall be conducted as necessary and as described in the Rooms 1028, 928, 927, 829, 827, 728, 727, 727A, 628, 627, 529, 527, 527A, 428, 427, 328, and 327.

7.2. Prior to performing microbiological remediation procedures, the Contractor shall seal all critical penetrations and openings to the work area. Establish phasing schedule with Government for each days work activity. Contractor shall HEPA-vacuum and/or wet wipe with a detergent solution all non-porous furniture and fixtures. Contractor will remove any furnishings from the remediation area, after it has been pre-cleaned. Upon completion, the Contractor will return the furnishings to the original location. If necessary, furnishings can be pre-cleaned and wrapped with two layers of 6-mil polyethylene and allowed to remain in the remediation area. Electrical equipment that poses an electrical hazard shall be HEPA vacuumed only.

7.3. Maintain a minimum of four air exchanges per hour within the remediation work area and a minimum negative pressure differential of –0.02 inches of water, continuously recorded by use of a magnehelic guage or equivalent device. Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the building. Contractor will secure entrance into the remediation area at the conclusion of each workday.

7.4. The walls undergoing remediation are fire rated partitions and have multiple layers of fire resistant gypsum board on each face unless otherwise indicated. Removal limits shall coincide with existing metal studs at or beyond the limits identified below. Joints between gypsum board on the surface and concealed layer shall be staggered horizontally and vertically and less than the length of gypsum board utilized. Demolition work shall be conducted utilizing methods to minimize noise and the spread of dust, such as the use of HEPA vacuums at the point of cutting and/or tools with shrouds or boots connected to a HEPA vacuum. See SSOW for additional requirements. The locations and approximate quantities for gypsum board remediation are listed below:

Gypsum board, shaft liner, and insulation totaling approximately 311 square feet will be removed from Room 928. This area includes the east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner). This area includes the south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner). This area includes the northwest column beam enclosure, on the north wall, 6' wide to a height of 3' (surface layer), 6' wide to a height of 2'6" (concealed layer), and 6' wide to a height of 2' (shaft liner); and on the west wall, 3' wide to a height of 3' (surface layer), 3' wide to a height of 2'6" (concealed layer), and 3' wide to a height of 2' (shaft liner). While these areas contain minimal mold contamination, it is present on multiple layers; therefore, the removal of additional quantities of gypsum board is required.

Gypsum board and insulation totaling approximately 15 square feet will be removed from Room 527. This area includes the portion of the north wall, between the east wall and the door to Room 527A, 2' wide to a height of 4' (surface layer) and 2' wide to a height of 3'6" (concealed layer).

Gypsum board and insulation totaling approximately 5 square feet will be removed from Room 527A. This area includes the portion of the south wall, between the east wall and the door to Room 527, 2' wide to a height of 18" (surface layer) and 2' wide to a height of 12" (concealed layer).

Gypsum board, shaft liner, and insulation totaling approximately 243 square feet will be removed from Room 428. This area includes the east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner). This area includes the south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner). While these areas contain minimal mold contamination, it is found on the inner layer; therefore, the removal of additional quantities of gypsum board is required.

7.5. In Rooms 928 and 428, a containment and negative pressure enclosure system shall be established as described in Section 4.0 Remediation Area. A decontamination unit shall be established as described in Section 5.0 Decontamination.

7.6. In Rooms 527 and 527A, a mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist any contaminated areas prior to removal. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.

7.7. In Room 1028, the north wall shaft liner in its entirety shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

7.8. In Room 829, the portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', and the adjacent south wall, from the southeast corner westward, 1' wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

7.9. In Room 728, the east (elevator shaft) wall, up to a height of 4', and the south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

7.10. In Room 727A, the portion of the west wall between the cable tray and the north wall, up to a height of 4', and the portion of the south wall above the door to Room 727, 3' wide to a height of 3', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

7.11. In Room 628, the east (elevator shaft) wall, up to a height of 4', and the south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

7.12. In Room 529, the portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

7.13. In Room 328, the east (elevator shaft) wall, up to a height of 2', and the south (elevator shaft) wall, up to a height of 2', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

7.14. During cleaning procedures conducted in Rooms 1028, 829, 728, 727A, 628, 529, and 328, a mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in Section 4.0 Remediation Area.

7.15. In Rooms 927 (approximately 4 linear feet of 11"), 827 (approximately 4 linear feet of 11"), 727 (approximately 3 linear feet of 18"), 627 (approximately 20 linear feet of 11" and 25 linear feet of 18"), 527 (approximately 4 linear feet of 11" and 25 linear feet of 18"), 427 (approximately 4 linear feet of 11" and 6 linear feet of 18"), and 327 (approximately 15 linear feet of 18"), all water stained and/or

contaminated chilled and heating water pipe insulation shall be removed and replaced.

7.16. Place MCM and MCE in a fiber/cardboard type drum or two layers of 6-mil polyethylene disposal bags with contents clearly labeled. At completion of each phase, notify the Government of completion so that Government can perform a visual inspection of the work area. Allow negative pressure system to operate a minimum of two hours after the last clean-up effort.

7.17. Upon approval of Government, remove barriers and disassemble regulated work area. Additional cleaning required in the work area because of the Government inspection shall be performed by Contractor, at no additional cost to the Government.

8.0 AIR MONITORING AND INSPECTION. The Government-retained Industrial Hygienist will determine any requirement for air monitoring, both during the remediation process and/or upon completion of the remediation process. Such area sampling will be conducted using Zefon filters and a high volume sampling pump. Procedural modifications to the decontamination procedures may be necessary at the discretion of the Government-retained Industrial Hygienist. The Government has the right to inspect the remediation work at times to be determined by the Government, but, at a minimum, once upon completed removal of contaminated materials, but before restoration materials are installed.

9.0 FINAL CLEARANCE. Acceptance of work will be dependant upon visual inspection. In areas where the gypsum board removal quantity exceeds 100 square feet, clearance air sampling shall also be conducted. The Contractor shall notify the Government when the microbiological removal is completed for each phase and the Government-retained Industrial Hygienist shall perform a thorough visual inspection of the phase within 24-hours. Clearance air sampling shall be conducted in Rooms 928 and 428. Clearance criteria shall be dependent upon the requirements stipulated in the DTW ATCT Mold Remediation Project Clearance Protocol attached and incorporated herein (See Attachment 2). All remaining rooms shall be clearly solely by visual examination.

10.0 DISPOSAL. All microbiological waste shall be disposed of at a municipal sanitary landfill. Waste bags shall not be overloaded and shall be securely sealed and stored in the designated area until disposal. Label bags, disposal containers, and truck during loading and unloading, in accordance with Federal, State and Local regulations. Contractor is responsible for removal of all materials from the Government's property.

ATTACHMENT 1

Guidelines on Assessment and Remediation of Fungi in Indoor Environments

ATTACHMENT 2

DTW ATCT MOLD REMEDIATION PROJECT CLEARANCE PROTOCOL

Mold Remediation Project Clearance Protocol

PREPARED FOR:

FEDERAL AVIATION ADMINISTRATION

Detroit Metropolitan Wayne County Airport Traffic Control Tower (DTW ATCT)

DETROIT, MICHIGAN

June 13, 2008

PREPARED BY:

Barbara Hebert, CIH
NISC, KANSAS CITY ARTCC DISTRICT TSU

The **DTW ATCT Mold Remediation and Restoration Project** will include the removal of moisture and microbiological-contaminated gypsum board, shaft liner, and insulation.

After Rooms 928 and 428 have passed a thorough visual inspection, and before the outer containment barrier is removed, clearance air sampling will be performed.

Five consecutive samples will be collected inside the containment area using a high volume air sampler and Zefon Air-O-Cell® cassettes. Sampling will be conducted at a flow rate of 15 liters per minute for a period of five minutes each, resulting in a collection volume of 75 liters of air. Environmental conditions may warrant the sample collection period to be reduced to one-minute intervals, in order to reduce the collection of non-microbial particulates that can mask the presence of mold spores.

Three consecutive samples will be collected outside the containment area, but inside the ATCT in a noncomplaint area, in the same manner as above. Sampling will be conducted at a flow rate of 15 liters per minute for a period of five minutes each, resulting in a collection volume of 75 liters of air.

Three consecutive samples will be collected outside of the building, in the same manner as above. Sampling will be conducted at a flow rate of 15 liters per minute for a period of 10 minutes each, resulting in a collection volume of 150 liters of air.

For all samples collected, the high volume air sampler will be calibrated before and after use.

All samples, one lab blank, and a completed Chain of Custody form will be sent to Aerotech Laboratories, Inc., by Federal Express Priority Overnight delivery. The samples will be mailed in a rigid container or box. There is no additional temperature handling requirement.

All samples will be clearly labeled. The sample identification number appearing on the cassette **must** match the identification number shown on the Chain of Custody form. The samples will be analyzed in accordance with **Aerotech Method A001** (equivalent to the cassette manufacturer's recommended analytical procedure) via light microscopy at 600X magnification, with the entire slide (100% of the sample) being analyzed. The results will be reported as a total fungal spore count, in counts per cubic meter (counts/M^3), which includes both viable and non-viable spores.

The area will be considered "clean" when the average airborne total mold spore concentration measured inside the containment area was not statistically higher than the average airborne concentration measured outside the containment area, **and** the **genus level** constituents similar for all samples taken inside the containment, inside the building (but outside of the containment) and outside of the building.

Statistical significance may be determined in the following manner:

A. All containment sample airborne total concentration levels are lower than those taken from outside the containment, or

B. The Z-test score is less than or equal to 1.65 Standard Deviations from the Mean, indicating a 90% confidence interval. The Z-test is carried out by calculating:

$$Z = \frac{Y_I - Y_O}{0.8\,(1/n_I + 1/n_O)^{1/2}}$$

where Y_I is the average of the natural logarithms of the inside samples, Y_O is the average of the natural logarithms of the outside samples, n_I is the number of inside samples and n_O is the number of outside samples.

Alternative A shall be considered first, then if necessary, Alternative B. Should the calculated Z-test score exceed 1.65, the abatement area must be recleaned. An additional set of 10 samples must then be collected, as defined above, in order to establish clearance.

The **genus level** constituents will be evaluated using the Spearman Rank Order Correlation (SROC), which is a statistical technique used to test the direction and strength of the relationship between two variables. It uses the statistic "Rs", which falls between –1 and +1. If the "Rs" value is –1, there is a perfect negative correlation; between –1 and –0.5, there is a strong negative correlation; between –0.5 and 0, there is a weak negative correlation; if 0, there is no correlation; between 0 and 0.5, there is a weak positive correlation; between 0.5 and 1, there is a strong positive correlation; and if 1, there is a perfect positive correlation. Calculated "Rs" values will also be compared to the Critical Values (CV) listed in Table 13.7 of the American Conference of Governmental Industrial Hygienists "Bioaerosols: Assessment and Control", which are drawn from a standard statistical table. Comparing the "Rs" value to the CV permits a methodical acceptance or rejection. If the "Rs" value exceeds the 0.1 confidence level, the populations appear to be related or similar. If the "Rs" value is below the 0.1 confidence level, the populations do not appear to be related or are different. Should the "Rs" value be below the 0.1 confidence level, the remediation area must be recleaned unless a professional opinion can justify rank differences to be insignificant.

Once the abatement area has passed the clearance criteria, the outer containment barrier will be removed and the room will be available for restoration.

Visual inspections and clearance air sampling will be performed upon completion of the mold remediation, but prior to the re-installation of new building materials.

The visual inspection, clearance air sampling, and data interpretation will be conducted by the government-retained Industrial Hygienist.

Federal Aviation Administration

AGL-473 PROJECT REVIEW TRACKING

This project will not advance until this form has been returned to AGL-473.
COMMENTS RECEIVED

PROJECT INFORMATION – PROJECT TYPE GENERAL CONSTRUCTION, STRUCTURAL, SPECIALTY CONTRACTOR (MICROBIOLOGICAL REMEDIATION)

Location	Detroit, MI
Facility	DTW TOWB
Project Title	MOISTURE DAMAGE REMEDIATION
JON	
Design Engineer	B. Hebert, D. Morse
Project Reviewer	B. Hebert, Wayne Vogelsburg
Courtesy Copy (FYI Only)	

PROJECT REVIEW PACKAGE INCLUDES THE FOLLOWING:

Item #	Document Title		Included
1.	Scope of Work		08/08/08
2.	Specifications – FAA-DTW-ATCT-2697		08/08/08
3.	Drawings		
	DWG NO	DWG TITLE	REV. DATE
	GL-D-414C-CSP	CONSTRUCTION SAFETY PLAN	R0 – 04/25/07
	DTW-D-ATCT-A03	MOISTURE DAMAGE REMEDIATION 3RD FL.	R1 – 08/08/08
	DTW-D-ATCT-A04	MOISTURE DAMAGE REMEDIATION 4TH FL.	R1 – 08/08/08
	DTW-D-ATCT-A05	MOISTURE DAMAGE REMEDIATION 5TH FL.	R1 – 08/08/08
	DTW-D-ATCT-A06	MOISTURE DAMAGE REMEDIATION 6TH FL.	R1 – 08/08/08
	DTW-D-ATCT-A07	MOISTURE DAMAGE REMEDIATION 7TH FL.	R1 – 08/08/08
	DTW-D-ATCT-A08	MOISTURE DAMAGE REMEDIATION 8TH FL.	R1 – 08/08/08
	DTW-D-ATCT-A09	MOISTURE DAMAGE REMEDIATION 9TH FL.	R1 – 08/08/08
	DTW-D-ATCT-A10	MOISTURE DAMAGE REMEDIATION 10TH FL.	R1 – 08/08/08
	DTW-D-ATCT-A11	MOISTURE DAMAGE REMEDIATION DETAILS	R0 – 08/06/08
4.	Government Furnish Equipment		N/A
5.	Construction Safety Plan – In Drawings		
6.	Cost Estimate		08/07/08
7a.	Form 3900.57 - Environmental & Safety Compliance Check List		07/18/08
7b.	Great Lakes EHS Checklist		07/18/08
7c.	Environmental Checklist for Ventilation and Airborne Contaminants		07/18/08
8.	Form 7460 - Construction on Airports		N/A
9.	Purchase Request Data		08/08/08
10.	Capitalization Authorization Form		07/18/08
11.	County Permit Form		08/06/08

Return this form to: FAA/AGL-473
Willow Run Airport East
8808 Beck Road
Belleville, MI 48111
Attn: Diane Morse

PERFORMANCE OF WORK ITEMS

MICROBIOLOGICAL REMEDIATION PROJECT
AT DETROIT METROPOLITAN AIRPORT
AIR TRAFFIC CONTROL TOWER

The contractor shall provide all the services, equipment, supplies, materials, and labor required. Work shall include, but not limited to, the following:

ALL FLOORS:

1. Prior to performing microbiological remediation procedures, the contractor shall seal all critical penetrations and openings to the work area with a minimum of two layers of 6-mil polyethylene, and shall be responsible for ensuring adjoining areas are not exposed to the microbiological contamination during the remediation.
2. Remove any MCM between the bottom metal runner/track and the concrete floor; between the top metal runner/track and the structural deck; and between the metal stud and exterior concrete wall.
3. The contractor shall minimize dust generation and use the methodologies outlined in *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1) for dust prevention and suppression.
4. All removals and other cleaning procedures shall be conducted at night between the hours of 11:00 pm and 6:00 am. Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the building.
5. Once the mold has been removed and clearance has been achieved, and the stained surfaces have been cleaned, then remove all partition walls, doors and door frames, except those around the elevator core and stairwell.
6. Cut a 1/2" gap between the bottom of the gypsum board and the concrete deck. Fill the gap with a 2-hr fire-rated caulk in the remaining partition walls around the elevator core and stairwell corridor.
7. Paint elevator core exterior and stairwell corridor with mold resistant paint.
8. Furnish and install fire-rated access panels in the center of the north and east elevator core wall. The bottom of the panel shall be 24" above the floor. Do not penetrate the shaft liner. See detail "B" on drawing DTW –D-ATCT-A11.

FLOOR 3

ROOM 327

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.

2. Approximately 15 linear feet of 18", water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 328

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The east (elevator shaft) wall, up to a height of 2', and the south (elevator shaft) wall, up to a height of 2', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 4

ROOM 427

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 4 linear feet of 11" and 6 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 428

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.
2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT room 428 in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1).
3. Remove and replace gypsum board, shaft liner, and insulation totaling approximately 243 square feet:
    a. The east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner).
    b. The south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner).
    c. **Elevator Shaft liner removal and replacement requires coordination with the Elevator Maintenance company and Air Traffic to schedule limited elevator shutdown time.**

FLOOR 5

ROOM 527

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist any contaminated areas prior to removal. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.
2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines On Assessment And Remediation Of Fungi In Indoor Environments* (GARFIE) (See Specification Attachment 1).
3. Approximately 4 linear feet of 11" and 25 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.
4. Remove and replace gypsum board and insulation totaling approximately 15 square feet, on the north wall, between the east wall and door to Room 527A, 2' wide to a height of 4' (surface layer) and 2' wide to a height of 3'6" (concealed layer).

ROOM 527A

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist any contaminated areas prior to removal. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.
2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1).
3. Remove and replace gypsum board and insulation totaling approximately 5 square feet on the south wall, between the east wall and the door to Room 527, 2' wide to a height of 18" (surface layer) and 2' wide to a height of 12" (concealed layer).

ROOM 529

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 6

ROOM 627

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 20 linear feet of 11" and 25 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 628

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The east (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 7

ROOM 727

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 3 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 727A

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The portion of the west wall between the cable tray and the north wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The south wall above the door to room 727, 3' wide to a height of 3', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

ROOM 728

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The east (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 8

ROOM 827

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 4 linear feet of 11" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 829

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The adjacent south wall, from the southeast corner westward, 1' wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 9

ROOM 927

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 4 linear feet of 11" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 928

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT rooms 928, in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (see attachment 1).
3. Remove and replace gypsum board, shaft liner, and insulation totaling approximately 311 square feet:
    a. The east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner).
    b. The south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner).
    c. The northwest column beam enclosure, on the north wall, 6' wide to a height of 3' (surface layer), 6' wide to a height of 2'6" (concealed layer), and 6' wide to a height of 2' (shaft liner);
    d. The west wall, 3' wide to a height of 3' (surface layer), 3' wide to a height of 2'6" (concealed layer), and 3' wide to a height of 2' (shaft liner).
    e. Elevator Shaft liner removal and replacement requires coordination with the Elevator Maintenance company and Air Traffic to schedule limited elevator shutdown time.

FLOOR 10

ROOM 1028

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.
2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT room 1028, in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (see attachment 1).
3. The north wall shaft liner in its entirety shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
4. Remove and dispose of existing carpet.
5. Remove and replace gypsum board, shaft liner, and insulation totaling approximately 792 square feet:
    a. The north (elevator shaft) wall, 22' wide for the full height (surface layer, concealed layer and shaft liner).

Specification
Microbiological Remediation
at
Detroit Metropolitan Airport
Air Traffic Control Tower

FAA-DTW-ATCT-2697

August 08, 2008

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Infrastructure Support Detached Staff
Willow Run Airport, East
8808 Beck Road
Belleville, Michigan 48111

Diane I. Morse
(734) 487-7330

TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 1A - GENERAL REQUIREMENTS

1A.1 **Summary of Work**. The work described consists of furnishing all necessary materials, labor, equipment, tools and supervision to remove and replace portions of the airport traffic control tower drywall. The project is located in Romulus, Michigan.

1A.2 **Scope of Work**. The Contractor is required to furnish all labor, materials, services, equipment, insurance, and perform all the work to remove and dispose of all microbiological contaminated materials (MCM) and microbiological contaminated elements (MCE) described in this Scope of Work (SOW). The Contractor shall be responsible for:

These specifications, together with other referenced documents, standards, and drawings in the contract documents, cover the requirements for all work associated with the drywall replacement.

ALL FLOORS:

1. Prior to performing microbiological remediation procedures, the contractor shall seal all critical penetrations and openings to the work area with a minimum of two layers of 6-mil polyethylene, and shall be responsible for ensuring adjoining areas are not exposed to the microbiological contamination during the remediation.
2. Remove any MCM between the bottom metal runner/track and the concrete floor; between the top metal runner/track and the structural deck; and between the metal stud and exterior concrete wall.
3. The contractor shall minimize dust generation and use the methodologies outlined in *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1) for dust prevention and suppression.
4. All removals and other cleaning procedures shall be conducted at night between the hours of 11:00 pm and 6:00 am. Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the building.
5. Once the mold has been removed and clearance has been achieved, and the stained surfaces have been cleaned, then remove all partition walls, doors and door frames, except those around the elevator core and stairwell.
6. Cut a 1/2" gap between the bottom of the gypsum board and the concrete deck. Fill the gap with a 2-hr fire-rated caulk in the remaining partition walls around the elevator core and stairwell corridor.
7. Paint elevator core exterior and stairwell corridor with mold resistant paint.
8. Furnish and install fire-rated access panels in the center of the north and east elevator core wall. The bottom of the panel shall be 24" above the floor. Do not penetrate the shaft liner. See detail "B" on drawing DTW –D-ATCT-A11.

FLOOR 3

ROOM 327

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 15 linear feet of 18", water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 328

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.

2. The east (elevator shaft) wall, up to a height of 2', and the south (elevator shaft) wall, up to a height of 2', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 4
ROOM 427

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.

2. Approximately 4 linear feet of 11" and 6 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 428

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT room 428 in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1).

3. Remove gypsum board, shaft liner, and insulation totaling approximately 243 square feet:

   a. The east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner).

   b. The south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner).

   c. **Elevator Shaft liner removal and replacement requires coordination with the Elevator Maintenance company and Air Traffic to schedule limited elevator shutdown time.**

FLOOR 5
ROOM 527

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist any contaminated areas prior to removal. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1).

3. Approximately 4 linear feet of 11" and 25 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

4. Remove gypsum board and insulation totaling approximately 15 square feet, on the north wall, between the east wall and door to Room 527A, 2' wide to a height of 4' (surface layer) and 2' wide to a height of 3'6" (concealed layer).

ROOM 527A

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist any contaminated areas prior to removal. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.
2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1).
3. Remove gypsum board and insulation totaling approximately 5 square feet on the south wall, between the east wall and the door to Room 527, 2' wide to a height of 18" (surface layer) and 2' wide to a height of 12" (concealed layer).

ROOM 529

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 6

ROOM 627

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 20 linear feet of 11" and 25 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 628

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The east (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 7

ROOM 727

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 3 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 727A

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.

2. The portion of the west wall between the cable tray and the north wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

3. The south wall above the door to room 727, 3' wide to a height of 3', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

ROOM 728

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.

2. The east (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

3. The south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 8
ROOM 827

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.

2. Approximately 4 linear feet of 11" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 829

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.

2. The portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

3. The adjacent south wall, from the southeast corner westward, 1' wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 9
ROOM 927

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.

2. Approximately 4 linear feet of 11" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 928

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT rooms 928, in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (see attachment 1).

3. Gypsum board, shaft liner, and insulation totaling approximately 311 square feet will be removed this area:

a. The east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner).

b. The south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner).

c. The northwest column beam enclosure, on the north wall, 6' wide to a height of 3' (surface layer), 6' wide to a height of 2'6" (concealed layer), and 6' wide to a height of 2' (shaft liner);

d. The west wall, 3' wide to a height of 3' (surface layer), 3' wide to a height of 2'6" (concealed layer), and 3' wide to a height of 2' (shaft liner).

e. Elevator Shaft liner removal and replacement requires coordination with the Elevator Maintenance company and Air Traffic to schedule limited elevator shutdown time.

FLOOR 10
ROOM 1028

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT room 1028, in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (see attachment 1).

3. The north wall shaft liner in its entirety shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

4. Remove and dispose of existing carpet.

5. Remove and replace gypsum board, shaft liner, and insulation totaling approximately 792 square feet:

   a. The north (elevator shaft) wall, 22' wide for the full height (surface layer, concealed layer and shaft liner).

The removal method and all related work must be in conformance with FAA polices, U.S. Occupational Safety and Health Administration (OSHA) and all State of Michigan regulations.

SECTION 1B - SPECIAL REQUIREMENTS

1B.1 COORDINATION. All contacts between the contractor and Airway Facilities/Technical Operations shall be coordinated through the Resident Engineer and his/her designated representative.

1B.2. CONTRACTOR'S RESPONSIBILITY. The Contractor shall perform all work required to give a complete and satisfactory job as required by this Statement of Work. The Contractor shall be responsible for performing this work in accordance with GARFIE. The Contractor shall perform the work per the schedule and sequence identified in the SSOW. The Contractor shall be responsible for all debris generated under this contract at the job site and during transport of microbiological containing or contaminated materials to an approved disposal site.

1B.3 SITE VISIT. **The quantity of MCM or MCE material to remediate is approximately 500 SF and the quantity of drywall removal is approximately 4300 SF FOR BIDDING PURPOSES ONLY**. The Contractor is responsible for inspecting the work space and field verifying all quantities for: constructing a negative pressure enclosure for each phase of the work, MCM, MCE removal and disposal, work area physical parameters, access limitations, and Government phasing limitations. The Contractor shall be required to work around existing furniture, fixtures

and finishes during the performance of this contract. The site visit shall be scheduled by the Government for interested microbiological remediation Contractors to identify specific work area and phasing requirements. The contractor shall take steps necessary to ascertain the nature of the work, and satisfy themselves to the conditions that can affect the work. No subsequent extras will be allowed due to any claim of lack of knowledge for conditions that can be determined by examining the site. Site visits can be arranged by contacting Facility Manager, Dave Saunders (734) 955-5101, at least 24 hours prior to the planned visit.

A. Property Damage. The Contractor shall take all precautions to avoid damage to Government property or equipment. Any damage to Government property or equipment by the Contractor shall be repaired by the Contractor to its original state or better condition at no additional expense to the Government.

B. Working Conditions. Portions of the ATCT will be occupied and Government operations will continue on a normal, temporary, or restricted basis for the duration of the project. The Contractor shall take all precautions to ensure that their operations are conducted in a manner that does not interfere with the normal operations of the surrounding facilities and the safety and health of the occupants or the environment. Contractor's personnel will have limited access to the facility.

C. Cleanup. Upon completion of the work at the site, all staging and debris from the project shall be removed from the site and disposed of properly. The entire area shall be left clean and acceptable to the Government.

D. Certifications. The Contractor shall be certified by the Indoor Air Quality Association (IAQA), the Institute of Inspection, Cleaning, and Restoration (IICR), the National Duct Cleaning Association (NADCA) or equivalent.

1B.4. SCHEDULE. See contract documents for duration of contract and notice to proceed.

Working Hours. Due to noise-level and air-quality issues, the work shall be performed during off-peak hours.

The work shall be performed between 11:00 p.m. and 6:00 a.m. Eastern Time, Monday through Friday on Government workdays only, unless arranged at least 48 hours in advance with the FAA Resident Engineer (RE).

1B.5 Pre-Construction Meeting. The Contractor shall attend a mandatory pre-construction meeting before starting work and the Government will schedule the meeting. The contractor shall attend the conference and shall abide by all agreements reached at the conference regarding:

A. Detailed procedures for administration of the project.
B. Identity of the Resident Engineer, authorized representative of the Government / Contracting Officer, and the contractor's superintendent(s).
C. Contractor's telephone number.
D. Detailed procedures for submittals.
E. Available storage areas for contractor's materials and equipment.
F. Compliance with FAA safety practices, general operating procedures and security regulations.
G. Availability of on site power for use by the contractor as determined by the Resident Engineer.
H. The FAA Pre-Construction and Maintenance Project Safety and Health Checklist, FAA form 3900-8 and the AGL Construction and Maintenance Project Ventilation and Airborne Contaminants Checklist will be reviewed and filled prior to the start of work.
I. Contractor shall provide copies of all MSDS sheet for any products and restoration materials to be used.
J. In addition to the foregoing, other subjects pertinent to the contract may be discussed.

1B.6. TEMPORARY FACILITIES AND STAGING AREA. The electrical energy and the water consumed shall be provided by the Government at no cost to the Contractor from existing lines and sources located in the ATCT or from services adjacent to the work areas. Contractor's use of utilities shall be coordinated with the Government. Contractor is responsible for ensuring that adequate electrical power and water are available to complete the work. The Contractor will be permitted to use the areas as directed by the Government for staging and storage of materials. The area is restricted to uncontaminated work equipment and supplies. The area shall be left clean and restored to the same condition as when accepted by the Contractor.

1B.7 MEDICAL REQUIREMENTS. Contractor shall provide medical surveillance and have a written Respiratory Protection program in place as required by OSHA 29 CFR 1910.134 for all personnel engaged in the removal and demolition of MCM and MCE. Respirators and filters provided shall be NIOSH approved and provide the appropriate level of protection.

1B.8 PROTECTIVE CLOTHING. Contractor shall provide workers and government representatives with sufficient sets of protective full body clothing. Such clothing shall consist of full body coveralls including head covers, foot covers and hand covers. Contractor shall provide additional personal protection safety equipment as required by applicable OSHA safety regulations. Contractor shall ensure that all employees who will conduct mold remediation activities are provided with, fit tested for, and trained in the correct use of personal protection equipment.

1B.9 REMEDIATION AREA. Contractor shall establish a remediation area and restrict the access to the microbiological work areas during work conducted in the ATCT. Contractor shall establish a roped-off perimeter and provide warning barrier tape and signs outside the perimeter of the negative pressure enclosure system. Contractor shall establish a negative pressure enclosure system by sealing all critical penetrations or openings to the work area with a minimum of two layers of six-mil polyethylene. Negative pressure enclosures shall have a minimum of four air exchanges per hour and shall be maintained and recorded with a magnehelic gauge or equivalent device under a minimum negative pressure differential of -0.02 inches of water relative to adjacent non-work area space. Negative air pressure equipment shall be equipped with a HEPA filter and exhaust shall be discharged outside the building, a minimum of 25 feet from building access points and building make-up air sources, or wherever necessary, negative air pressure equipment shall be equipped with a HEPA filter and exhaust shall be discharged through a second HEPA filter in order to permit recirculation of air inside the building. Personnel shall wear and utilize protective clothing and equipment in the remediation area as specified herein.

1B.10 DECONTAMINATION AREA. Contractor shall establish a decontamination unit for passage to and from the work area during remediation operations in order to minimize the leakage of mold-contaminated dust to the outside. This unit shall consist of a minimum of two chambers, including a clean room and equipment room separated by airlocks. The airlocks shall be formed by overlapping three sheets of 6-mil polyethylene sheeting at the exit of one room and three sheets at the entrance to the next room, with three feet of space between the barriers. Airlocks shall be constructed to effectively maintain negative pressure while not inhibiting worker egress is an emergency situation.

1B.11 WORKER PROTECTION PROCEDURE.

A. Each worker and authorized visitor shall, upon entering the job site, put on appropriate respirator and clean protective clothing, before entering the work area.

B. Each worker and authorized visitor shall remove gross contamination from clothing by HEPA vacuuming, prior to leaving the remediation work area. After decontamination of protective clothing, while still wearing the respirator, remove protective clothing and dispose as microbiological waste, as appropriate, in a drum or two layers of 6-mil polyethylene disposal bags.

C. Workers shall not eat, drink, smoke, or chew gum or tobacco at the work site. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of MCM or MCE and until final cleanup is completed.

1B.12 AIR MONITORING AND INSPECTION. The Government-retained Industrial Hygienist will determine any requirement for air monitoring, both during the remediation process and/or upon completion of the remediation process. Such area sampling will be conducted using Zefon filters and a high volume sampling pump. Procedural modifications to the decontamination procedures may be necessary at the discretion of the Government-retained Industrial Hygienist. The Government has the right to inspect the remediation work at times to be determined by the Government, but, at a minimum, once upon completed removal of contaminated materials, but before restoration materials are installed.

1B.13 FINAL CLEARANCE. Acceptance of work will be dependant upon visual inspection. In areas where the gypsum board removal quantity exceeds 100 square feet, clearance air sampling shall also be conducted. The Contractor shall notify the Government when the microbiological removal is completed for each phase and the Government-retained Industrial Hygienist shall perform a thorough visual inspection of the phase within 24-hours. Clearance air sampling shall be conducted in Rooms 928 and 428. Clearance criteria shall be dependent upon the requirements stipulated in the DTW ATCT Mold Remediation Project Clearance Protocol attached and incorporated herein (See Attachment 2). All remaining rooms shall be clearly solely by visual examination.

1B.14 DISPOSAL. All microbiological waste shall be disposed of at a municipal sanitary landfill. Waste bags shall not be overloaded and shall be securely sealed and stored in the designated area until disposal. Label bags, disposal containers, and truck during loading and unloading, in accordance with Federal, State and Local regulations. Contractor is responsible for removal of all materials from the Government's property.

1B.15 INGRESS AND EGRESS TO WORK AREA. The Resident Engineer shall direct all ingress and egress to the work area. Security precautions against unauthorized facility entrance will be maintained.

1B.16 SECURITY REQUIREMENTS. The Airport Traffic Control Tower (ATCT) facility is a secured facility and access to the interior is restricted to FAA personnel only. Therefore, all work included in this contract shall be coordinated to preclude interference with the operation of the facility. The contractor will coordinate this with the contracting officer through the Resident Engineer. The contractor shall examine the premises and satisfy himself/herself as to the existing conditions under which he/she will be obligated to perform the work included in this contract.

1B.17 PARKING OF CONTRACTOR VEHICLES. All personnel will park their vehicles away from the building and all access doors or as authorized by the Resident Engineer. Materials and tools may be off-loaded at the work site by arrangement with the Resident Engineer.

1B.18 STORAGE OF MATERIALS. The contractor shall store all materials in a manner to protect them from all elements of the weather. Storage of reasonable quantities of material, supplies, and tools on site is permissible providing the Resident Engineer authorizes the location. The FAA is not responsible for the security of the materials, supplies and tools owned by the contractor.

1B.19 COMPLIANCE WITH LOCAL CODES AND OTHER CODES. The contractor shall comply with local and other codes of standard trade practices adopted by these contract documents. Where the requirements of the specifications and drawings exceed those of the local and adapted codes, the contractor shall comply with the requirements of the specifications and drawings.

1B.20 CLEANING.

A. Remediation Area. The contractor shall keep the remediation area in a clean and proper condition. All rubbish and waste resulting from the execution of the work shall be removed at the end of each day or as directed by the Resident Engineer.

B. Waste Packing Materials. Immediately after unpacking, all packing material shall be removed from the building and the premises.

C. Final Cleanup. Upon completion of work and before final inspection, the contractor shall remove his working tools, equipment, debris, rubbish and unused materials from the building site.

D. Disposal. Disposal of rubbish and debris will be offsite and at no additional cost to the FAA or as directed by the Resident Engineer.

1B.21 NON-INTERFERENCE WITH EXISTING FACILITY OPERATION.

A. Job Conditions. The access to the facility shall be kept unobstructed at all times. If any interference with the existing facility operation or access seems to be unavoidable, the contractor shall advise the contracting officer through the Resident Engineer 24 hours before such interference. FAA reserves the right to stop work at any time if the operation of this facility is jeopardized by the contractor's work.

B. Equipment Shutdown. Each ATCT facility maintains air traffic control continuously without shutdown. Various techniques are employed to achieve maximum system availability. Mechanical and electrical systems in direct support of air traffic operation and environmental systems have redundant configurations. Shutdown of equipment shall be scheduled with the Resident Engineer at least 24 hours prior to the control system installer's need. The reliability of mechanical and electrical systems is compromised when redundant equipment is not available. Every effort will be made by the FAA to allow work to be accomplished during the installer's working hours; however, the Resident Engineer will restore equipment to service immediately after this period. FAA personnel shall accomplish equipment shutdown.

1B.22 OTHER CONTRACTS. The Government may undertake other contracts for additional work at or near the site of the work under this contract. The contractor shall fully cooperate with other contractors and with the Government employees and shall adapt scheduling and performing the work under this contract to accommodate the other work. The contractor shall not commit or permit any act that will interfere with performance of work by any other contractor or by Government employees.

1B.23 CONTRACTOR'S LIABILITY. Damage to the existing facility or equipment caused by the contractor shall be immediately reported to the FAA Resident Engineer without delay. The contractor shall be responsible for repairing or having repaired all damaged areas to the facility or equipment directly caused by contractor related work. All repairs shall be accomplished, without delay, at the contractor's expense to the satisfaction of the FAA Resident Engineer.

1B.24 PERMITS. The contractor shall be responsible for obtaining all city, county, etc., permits, if required, to complete the project, at no additional cost to the Government.

1B.25 MATERIAL. All equipment, material, and articles incorporated into the work covered by this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract.

References in the specifications to material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The contractor may, at his option, use any equipment, material, article, or process that, in the judgment of the Resident Engineer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.

A. Brand Name Items. The use of brand names or equal products in this specification does not constitute a requirement that they are the only materials that meet the specifications in this contract. They are used as an illustration of known acceptable sources or products.

1B.26 WORKMANSHIP. The contract shall be accomplished by workers experienced in each trade in accordance with the highest standards of the various trades involved. The FAA Resident Engineer must approve all details, to assure a professional and complete project, whether stated in the specifications or not. The Resident Engineer may require, in writing, that the contractor will remove from the work any employee the Resident Engineer deems incompetent, careless, or otherwise objectionable.

1B.27 SUPERINTENDENCE BY THE CONTRACTOR. At all times during performance of this contract and until the work is completed and accepted, the contractor shall directly superintend the work on site or assign and have on site a competent superintendent who is satisfactory to the Resident Engineer and has authority to act for the contractor.

1B.28 WARRANTIES. The contractor shall guarantee that all works performed under this contract to be free from defects in all material and workmanship for a period of 12 months from the date of final acceptance by the Government.

1B.29 RESPONSIBILITIES. If within the warranty period, such parts or work performed under this contract is found to be defective in materials or workmanship, the contractor immediately without any additional cost to the Government shall replace that portion of work.

SECTION 1C - SUBMITTALS

1C.1 INTRODUCTION. Each product required for use in the contract drawings and specifications must meet the actual minimum needs of the Government as demonstrated in the salient characteristics for that product. If a brand name product is used in the drawings or specifications, it should be regarded as a "known acceptable source". The product used can be identical or equal to the brand name product or known acceptable source in meeting the salient characteristics, but it need not exceed the actual minimum requirements. Any brand name product or known acceptable source mentioned will, however, not be required for use in order to comply with the specification or drawing unless those documents make it clear that the brand name product is required, and substitution is prohibited.

1C.2 REQUIREMENTS. The Contracting Officer or his/her designee must approve each product that a Contractor wishes to use that is not a known acceptable source, before use. To gain approval, the Contractor must submit documents and/or samples that will demonstrate the product clearly will meet the Government's minimum needs, and demonstrates appropriate salient characteristics. All submittals must be in writing. The Contracting Officer shall have the right to require submittals from the Contractor where the Contractor makes an unsolicited change proposal.

The information presented in a submittal shall be sufficient to demonstrate that all specification requirements for the subject material, equipment, methods, or plans, are met by the Contractor's proposal.

1C.3 SUBMITTAL REVIEW. When submitting before the Notice to Proceed date, the Contractor shall send the submittal package(s) directly to the Contracting Officer. When submitting after Contract work has begun, the Contractor shall give submittal packages to the Resident Engineer, who will forward them promptly to the Contracting Officer. In either case, the submittal will return directly from the Contracting Officer to the Contractor, with the Contracting Officer's approval, approval with comments, or disapproval.

1C.4 SUBMITTAL TIME FRAME. To provide adequate time for document transmission and submittal review, the FAA reserves the right to take ten days to complete a review, transmission date to transmission date. Since this Contract has a short duration, the Contractor is urged to initiate submittals along with his/her bid and to in general to expedite document transmission. The Contracting Officer will expedite reviews and document transmission to the extent that it is feasible.

1C.5 SUBMITTALS

A. The contractor shall submit all the following:
   1. Work Plan
   2. Safety Program
   3. Certificate of training, accreditation, qualification
   4. List of Employees
   5. Proof of Insurance
   6. Material Safety Data Sheets for all chemical products.
   7. Respiratory Fit Test and Medical Surveillance for employees scheduled for this project.
   8. Negative Air HEPA Filtration Equipment Specification Sheet
   9. Proposed Phasing Schedule.

B. All required submittals shall be provided to the Contracting Officer at the following address:

   FEDERAL AVIATION ADMINISTRATION
   2300 East Devon Ave.
   Des Plaines, IL 60018

1C.6 OTHER ITEMS. Any notification to any regulatory agency whether federal, state or local is the responsibility of the Mold abatement contractor. A copy of any notification is to be provided to the RE for record retention.

1C.7 PROCUREMENT BEFORE APPROVAL. The Contractor is advised not to procure any item for which submittal approval is required but not yet granted. If approval is denied, the Contractor will be prevented from installing the disapproved item(s). The Contractor must transmit a new submittal package for the new items replacing the disapproved items, and must procure only approved items. The Contractor shall take responsibility for the delivery and installation of any items installed before submittal approval is granted. The FAA reserves the right to discontinue fieldwork on any item furnished without submittal approval.

1C.8 CONTRACTOR QUALIFICATION REQUIREMENTS. The contractor shall provide all the services, equipment, supplies, materials, and labor required to remediate, remove, replace drywall & insulation, and dispose all waste. The abatement contractor must comply with the following:

A. All work shall be done under the direct supervision of a professional with experience and training in mold remediation.
B. The contractor shall coordinate and prepare a schedule to be approved by the Resident Engineer for conducting the remediation at DTW ATCT.
C. Prior to the scheduled pre-construction meeting the contractor shall provide copies of all MSDS sheets for any chemicals and other products that have been authorized by the FAA that will be brought on site and used during this project.
D. No chemical cleaners, disinfectants, mold inhibitors, fungicides, encapsulants, spray adhesives, odor masking agents, air fresheners or similar materials are authorized for use during this project and may not be brought onsite. When approved by the FAA prior to use, small quantities of low odor consumer type hand dishwashing detergent may be used when mixed with water for the purpose of wetting cleaning cloths used for damp wiping surfaces.
E. The surfaces of the room shall be HEPA vacuumed or damp wiped, and then covered prior to the start of any mold remediation work.
F. All 6-mil polyethylene sheeting is to be fire retardant.
G. The contractor shall notify the RE **IMMEDIATELY** if any conditions are identified during the remediation, which may require immediate attention to prevent potential exposure to mold at the facility.

H. Security and insurance requirements: The ATCT's are secured facilities and all personnel entering the facility shall meet all security and insurance requirements for gaining access to the individual facility. Insurance requirements are listed below:

SECTION 1D - ABATEMENT

1D.1 SECURITY.

The DTW ATCT is under security at all times. All critical areas (ATCT tower and base building) are controlled and security must be maintained. The contractor will provide a list of all personnel that will be entering the facility to do abatement work, to the CO/COR/RE.

The abatement Contractor shall maintain a logbook documenting entry into and out of the regulated work area. The Contractor shall not allow unauthorized personnel access to the site. Authorized personnel include the Abatement Contractor and his/her workers, CO and his/her representatives, the Environmental Contractor, representatives of regulatory agencies having jurisdiction over the project, FAA bargaining unit representatives and fire or medical response personnel in the event of emergency. No other person(s) may enter the areas occupied by the contractor or his/her equipment without submitting evidence of completion of required medical examinations and respirator training to the COTR/RE prior to entering the abatement areas.

All facility-specific security procedures will be followed.

1D.2 DRYWALL REMOVAL.

A. Remove drywall to the extent indicated on the drawings. Drywall shall be cut away through the use of a spiral cutting saw equipped with a close capture exhaust system attached to a HEPA filtered vacuum for dust control. The cutting depth of the spiral saw will be adjusted to a depth slightly less than the thickness of the drywall. Final cutting of the scored drywall will be made with a razor knife to avoid release of dust into the wall cavity and to prevent damage to concealed equipment, or additional layers of wall board that are present. In areas were access restrictions prevent use of the spiral saw, hand saws may be used, but only while a HEPA filtered vacuum is used to capture dust at the point of generation. Reciprocating saws shall not be used.

DIVISION 7 – THERMAL AND MOISTURE PROTECTION
SECTION 7A – BUILDING INSULATION

7A.1 GENERAL.-

A. Scope.- This section includes furnishing and installing the following materials required for the work:

1. Batts or Blankets
2. Plastic Sheet Vapor Retarder
3. Fire-Rated Sealing Putty
4. Fire Stopping

7A.2 APPLICABLE DOCUMENTS.- The following specifications and standards, of the issues currently in force, form a part of this section and are applicable as specified herein:

1. American Society for Testing and Materials Standards (ASTM).-

C 552	Cellular Glass Thermal Insulation
C 578	Rigid, Cellular Polystyrene Thermal Insulation
C 665	Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
E 84	Surface Burning Characteristics of Building Materials

2. Federal Specifications (FS).-

HH-I-1972/1	Insulation Board, Thermal Polyurethane or Polyisocyanurate, Faced with Aluminum Foil on both Sides of the Foam.

3. Underwriter's Laboratories, Inc. (UL) Publication.-

Building Materials Directory

7A.3 MATERIALS.-

A. Factory Mutual Research Corporation (FM) Publication.-

Approval Guide

B. Batts or blankets conforming to ASTM E 84, and ASTM C665.-Type I shall have a flame spread rating of 25 or less without evidence of continued progressive combustion and a smoke developed rating of 50 or less. Unless specified otherwise in the following paragraphs, glass fiber insulation shall be accepted.

Insulation shall be either blanket or batt type in width required to fill the stud spaces. Provide "U" value of .05 for exterior walls and "U" value of .09 for interior partitions where required.

Known acceptable sources:

Boise Cascade Building Products - Insulite Fiberglas Building Insulation.

National Gypsum - Gold Bond Glass Fiber Blankets

Owens-Corning - Fiberglas Building Insulation

Manville - Commercial building insulation

C. Fire-rated sealing putty.- Furnish and install a pre-mixed and reusable putty for completely filling fire-rated wall and floor openings to prevent the spread of fire, smoke and toxic gases through, cable, pipe and conduit penetrations. Product shall be listed in UL Building Materials Directory.

Known acceptable sources:

The RectoSeal Corp. – Metacaulk 1000

Nelson Electric "Flame Seal"

Or approved equal

D. Fire-rated caulk.- Furnish and install a pre-mixed caulk for completely filling fire-rated 1/2" wall to floor gap to prevent the spread of fire, smoke and toxic gases. Product shall be listed in UL Building Materials Directory.

Known acceptable sources:

JACO Manufacturing inc. Fire and Draft Sealer™

JACO Manufacturing inc. Firestop Plus™

Or approved equal

E. Fire Safing.-Furnish and install mineral fiber safing insulation, vapor retarding foil faced, with galvanized steel safing clips.

Known acceptable source:

USG Interiors, Inc. Thermafiber Division.

F. Fire Blocks.- Fire-stop at cable trays penetration through concrete or CMU wall or slab shall conform to Underwriters Laboratories (UL) Design No. CAJ4035. Fire-stop at cable trays penetration through gypsum wall shall conform with UL Design No. WL4011, unless otherwise indicated on drawings.

Known acceptable source:

Hilti Fire-Stop Systems

7A.4 INSTALLATION.-

A. Wall insulation.- Use open face batts placed between studs so as to be continuous for full floor-to-floor height unless shown otherwise. Tightly butt insulation at cross joints and against abutting surfaces. Fasten in place as recommended by the manufacturer. Where electric outlets, ducts, pipes, vents or other utility item occur, insulation shall be placed on the cold or weather side of the item. Install plastic sheet vapor barrier to warm side of insulation. Foundation walls and slab perimeter insulation shall be installed as per manufacturer's recommendation.

B. Foil Faced Rigid Insulation board at Base Building basement and Tower walls.-Install rigid insulation board per "Celotex" specification for cavity wall insulation with 3/4-inch reflective air space and hat shaped metal furring, with 5/8" Type "X" gypsum wallboard thermal barrier.

C. Vapor barrier.- Install fire retardant reinforced polyethylene sheet vapor barrier to warm side of unfaced batt or rigid insulation. Extend vapor barrier full height from top of concrete floor slab to underside of the floor or roof slab above. Tape joints and around penetrations to provide continuous membrane.

D. Fire-rated sealing putty.- After floor and wall finishes have been applied and cured, install fire-rated sealing putting in compliance with manufacturer's printed instructions. Provide neat, clean installation flush with finish surfaces. Seal openings around penetrations through fire-rated partitions, walls, floors, and all other locations as required by local code authorities. Provide shelf angles where applicable, to hold fire-rated sealing putting in place.

E. Fire Safing.-Install along edge of floor slab, and curtain wall glazing panels and all pipe penetrations through the floor slab in conjunction with fire - rated sealing putty and as per manufacturer's recommendations.

F. Fire Blocks.- Install at cable tray penetrations in accordance with manufacturer's printed recommendations.

7A.5 QUALITY ASSURANCE.-

A. Submittals.- Submit for all types of installation required manufacturer's literature with samples of proposed fastening methods for approval.

1. Fire-rated sealing putty.- Submit for approval product samples and list of openings to be sealed.

2. Fire Blocks.- Submit for approval product sample and list of openings to be sealed.

B. Delivery and storage.- Deliver materials to the site in manufacturers unopened original packaging with the manufacturer's name brand clearly visible.

DIVISION 8 – DOORS AND WINDOWS
SECTION 8A – ACCESS DOORS AND FRAMES

8A.1 GENERAL.

A. Scope:

1. Fire rated wall access panels.

2. Related hardware and attachments.

B. System Description

1. Design Requirements:

2. Verification: Obtain specific locations and sizes for required access doors and frames from trades, including mechanical and electrical, requiring access to concealed equipment and indicate on submittal schedule.

C. Submittals

1. Shop Drawings:

   a. Door and panel units: Show types, elevations, thickness of metals, full size profiles of door members.
   b. Hardware: Show materials, finishes, locations of fasteners, types of fasteners, locations and types of operating hardware, and details of installation.
   c. General: Show connections of units and hardware to other Work. Include schedules showing location of each type and size of door and panel units.
   d. Product Data: Manufacturer's technical data for each type of access door and panel assembly, including setting drawings, templates, fire-resistive characteristics, finish requirements, and details of anchorage devices.
   e. Include complete schedule, types, locations, construction details, finishes, latching or locking provisions, and other pertinent data.
   f. Manufacturer's Installation Instructions: Indicate installation requirements and rough-in dimensions.

D. Quality Assurance

1. Single Source Responsibility: Obtain access door and panel units, and frames for entire Project from 1 source and 1 single manufacturer.

2. Fire-Resistance Ratings: Wherever a fire-resistance classification is indicated, provide access door and panel assemblies with panel door, frame, hinge, and latch from manufacturer listed in Underwriter's Laboratories (UL), "Building Materials Directory" for rating shown.

3. Provide 90 minute UL label at 2-hour rated partitions.

4. Size Variations: Obtain Architect's acceptance and approval of manufacturer's standard size units that may vary slightly from sizes indicated on Drawings.

5. Coordination: Provide inserts and anchoring devices that will be built into other Work for installation of access door assemblies. Coordinate delivery with other Work to avoid delay.

E. Delivery, Storage And Handling

1. Package and ship per manufacturer's recommendations.

2. Store per manufacturer's instructions.

3. Store in dry area out of direct sunlight.

F. Warranty

1. Provide manufacturer's written warranty

2. Warrant materials and workmanship against defects after completion and final acceptance of Work.

3. Repair defects, or replace with new materials, faulty materials or workmanship developed during the guarantee period at no expense to Owner.

4. Access Panel Warranty: 1 year from date of Substantial Completion of Project.

8A.2 PRODUCTS

A. Manufacturers
Subject to compliance with requirements, provide products from the following manufacturer or equivalent:
Nystrom Building Products
1701 Madison Street NE
Minneapolis, MN 55413-1400
Toll Free Hotline: 800-547-2635
Toll Free Fax: 800-317-8770
Direct Phone: 612-781-7850
Direct Fax: 612-781-1363
E-Mail: info@nystrom.com
Internet: www.nystrom.com

Specifications and Drawings are based on manufacturer's proprietary literature from Nystrom Building Products. Other manufacturers shall comply with minimum levels of material, color selection, and detailing indicated in Specifications or on Drawings.

B. Materials

1. Commercial quality, cold steel sheet with baked on rust inhibitive gray primer.

2. Galvanized, bonderized steel with baked on rust inhibitive gray primer.

3. Type: No. 304 stainless steel with No. 4 satin polish finish.

C. Access Panels

1. Insulated fire rated access panels for walls, Nystrom I series

   a. Maximum size horizontal applications = 12 inch.
   b. Maximum size vertical applications: IT= 12 inch.
   c. Door: Fabricate from 20-gauge cold rolled sheet steel, insulated sandwich type construction.

d. Frame: Fabricate from 16-gauge cold rolled steel of configuration to suit material application.
e. IT - All surfaces - 1 inch flange at perimeter.
f. Hinge: Flush continuous piano type on model IT.
g. Latching/Locking mechanism: Knurled knob/flush key operated latch bolt - standard.
h. Finish: Phosphate dipped with factory applied prime coat.
i. Insulation: 2 inch thick fire rated mineral fiber.
j. Automatic closure device: Integral automatic spring closure device for each door.
k. Interior latch release: Mechanism to allow for panel to open from interior side.

D. Fabrication

1. Manufacture each access panel assembly as an integral unit ready for installation.

2. Welded construction: Furnish with a sufficient quantity of 1/4 inch mounting holes to secure access panels to types of supports indicated.

3. Recessed panel: Form face of panel to provide specified recess for application of finish material. Reinforce panel as required to prevent buckling.

4. Furnish number of latches required to hold door in flush, smooth plane when closed.

8A.3 EXECUTION

A. Examination
Verify that rough openings for door and frame are correctly sized and located.

B. Preparation
Advise installers of work relating to access panel installation including rough opening dimensions, locations of supports, and anchoring methods. Coordinate delivery with other work to avoid delay.

C. Installation

1. Install access door and frame units per manufacturer's written instructions.

2. Install frames plumb and level in opening. Secure rigidly in place.

3. Position units to provide convenient access to concealed Work requiring access.

4. Fire-rated units: Include UL or Warnock-Hersey labels.

D. Adjust And Clean

1. Adjust panel after installation for proper operation.

2. Remove and replace panels or frames that are warped, bowed, or damaged.

DIVISION 9 - FINISHES
SECTION 9A – GYPSUM BOARD

9A.1 – GENERAL

A. Related Documents. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements, apply to this section.

B. Scope. This section includes, but shall not be limited to, non-load-bearing steel framing members for gypsum board assemblies and gypsum board assemblies attached to steel framing.

C. References. The publications listed below for a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. The edition/revision of the referenced publications shall be the latest date as of the date of the Contract Documents, unless otherwise specified.

1. American Society of Testing and Materials (ASTM)
   a. ASTM C 36 "Standard Specification for Gypsum Wallboard".
   b. ASTM C 442 "Standard Specification for Gypsum Backing Board and Coreboard".
   c. ASTM C 475 "Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board".
   d. ASTM C 630 "Standard Specification for Water-Resistant Gypsum Backing Board".
   e. ASTM C 840 "Standard Specification for Application and Finishing of Gypsum Board".
   f. ASTM C 1047 "Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base".

2. Gypsum Association (GA)
   a. GA 214 "Recommended Specification: Levels of Gypsum Board Finish".
   b. GA 216 "Application and Finishing of Gypsum Board".
   c. GA 505 "Gypsum Board Terminology".
   d. GA 600 "Fire Resistance Design Manual".

3. Underwriters Laboratories, Inc. (UL)
   a. UL FRD "Fire Resistance Directory".

C. Assembly Performance Requirements

1. Performance Requirements, General: Provide gypsum board systems complying with performance requirements specified, as demonstrated by pre-testing manufacturer's corresponding stock system.

2. Fire Resistance Rating: Where indicated, provide materials and construction which are identical to those of assemblies whose fire resistance has been determined per ASTM E 119 by a testing and inspection organization acceptable to authorities having jurisdiction.
   a. Provide fire resistance-rated assemblies identical to those indicated by reference to file numbers in GA 600 or to design designations in UL FRD or in listings of other testing and inspecting agencies acceptable to authorities having jurisdiction.

3. Sound Transmission Characteristics: For gypsum board assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency. Provide the following minimum ratings for sound transmission class (STC):

a. STC Rating: As indicated but not less than 35.

A. Submittals

1. General: Submit the following in accordance with Conditions of the Contract and Division 1 – General Requirements.

2. Product Data: Submit product data for each type of product specified including, but not limited to, standard details, specifications, installation instructions, and general manufacturer's recommendation.

3. Shop Drawings: Submit shop drawings of unusual conditions in connection with gypsum board construction not specifically shown in manufacturer's product data. Provide elevations and reflected ceiling plans indicating proposed locations for expansion and control joints.

4. Samples: Submit 12 inch (305 mm) square sample boards showing each trim, reveal, control joint, inside and outside corner condition, and typical taped and floated joint. Show intersections, corners, tees, and splices on each sample.

5. Product Certificates: Submit product certificates signed by manufacturers of gypsum board assembly components certifying that their products comply with specified requirements.

6. Product Test Reports: Submit test reports indicating and interpreting test results relative to compliance of gypsum board assemblies with fire resistance, structural performance, and acoustical performance requirements.

7. Research Reports: Submit research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction which evidence gypsum board assembly's compliance with requirements and with building code in effect for the Project.

B. Quality Assurance

1. Single Source Responsibility:
   a. Steel Framing: Obtain steel framing members for gypsum board assemblies from a single manufacturer.
   b. Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.
   c. Finishing Materials: Obtain finishing materials from wither the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

2. Field Samples: On actual gypsum board assemblies, prepare field samples of at least 100 square feet (9.3 m^2) in surface area for the following applications. Simulate finished lighting conditions for review on in-place unit work.
   a. Wall surfaces indicated to receive non-textured paint finishes.
   b. Ceiling surfaces indicated to receive non-textured paint finishes.

3. Pre-Installation Conference: Conduct pre-installation conference at the Project site to comply with requirement of Division 1 – General Requirements.

C. Delivery, Storage, And Handling

1. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

2. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

3. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

D. Project Conditions

1. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

2. Room Temperatures: For attachment of gypsum board to framing, maintain not less than 40° F (4° C). For finishing of gypsum board, maintain not less than 50° F (10° C) for 48 hours prior to application and continuously after until dry. Do not exceed 95° F (35° C) when using temporary heat sources.

3. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

9A.2 PRODUCTS

A Gypsum Board Products

1. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints. Strongly recommend the use of paperless gypsum board such as DensArmor Plus or equivalent designed for mold and moisture resistance. Water absorption should be less than 5% by weight. When tested in accordance with ASTM D 3273, the product should show no fungal growth and have a rating of 10.
   a) Thickness: Provide gypsum board in thickness indicated or, if not otherwise indicated, in either ½ inch (13 mm) or 5/8 inch (16 mm) thickness to comply with ASTM C 840 for application system and support spacing indicated.

2. Gypsum Wallboard: Comply with ASTM C36 and as follows:
   a) Typed:
      i. Regular for vertical surfaces, unless otherwise indicated.
      ii. Type X where required for fire resistive-rated assemblies.
      iii. Sag-resistant type for ceiling surfaces.

   b) Edges: Tapered
   c) Thickness: 5/8 inch (16 mm), unless otherwise indicated.

3. Gypsum Backing Board for Multi-Layer Applications: Comply with ASTM C 442 or, where backing board is not available from manufacturer, gypsum wallboard complying with ASTM C 36, and as follows:
   a) Type:
      i. Regular for vertical surfaces, unless otherwise indicated.
      ii. Type X where indicated or required for fire resistive-rated assemblies.
      iii. Sag-resistant type for ceiling surfaces, unless otherwise indicated.
   b) Edges: Manufacturer's standard.
   c) Thickness: 5/8 inch (16 mm), unless otherwise indicated.

4. Water-resistant Gypsum Backing Board: Comply with ASTM C 630 and as follows:
   a) Type:

i. Regular, unless otherwise indicated.
ii. Type X where required for fire resistive-rated assemblies.

b) Thickness: 5/8 inch (16 mm), unless otherwise indicated.

B. Cementitious Backer Units

1. General: Provide cementitious backer units complying with ANSI A118.9, of thickness and width indicated below, and in maximum lengths available to minimize end-to-end butt joints.
   a. Thickness: 5/8 inch (16 mm), unless otherwise indicated.
   b. Width: Manufacturer's standard width but not less than 32 inches (813 mm).

C. Joint Treatment Materials

1. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

2. Joint Tape for Gypsum Board: Provide paper reinforcing tape, unless otherwise indicated.
   a. Use pressure sensitive or staple-attached open weave glass fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

3. Joint Tape for Cementitious for Backer Units: Provide polymer-coated, open glass fiber mesh.

4. Setting Type Joint Compounds for Gypsum Board: Provide factory-packaged, job-mixed, chemical hardening powder products formulated for uses indicated.
   a. Where setting type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
   b. For pre-filling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.
   c. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by the gypsum board manufacturer for this purpose.
   d. For topping compound, use sandable formulation.

5. Drying Type Joint Compounds for Gypsum Board: Provide factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
   a. Ready-Mixed Formulation: Factory-mixed product.
   b. Topping Compound: Topping compound formulated for fill (second) and finish (third) coats.
   c. All-Purpose Compound: All-purpose compound formulated for both taping and topping compounds.

6. Joint Compound for Cementitious Backer Unit: Provide material recommended by cementitious backer unit manufacturer.

D Acoustical Sealant

1. Latex Acoustical Sealant: Provide manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
   a. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.

b. Product has flame spread and smoke developed ratings of less than 25 per ASTM E 84.
   ii. Acoustical Sealant for Concealed Joints: Provide manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

E. Miscellaneous Materials

1. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer

2. Spot Grout: Comply with ASTM C 475, setting type joint compound recommended for spot grouting hollow metal doorframes.

3. Screws:
   a. Provide steel drill screws complying with ASTM C 1002 for the following applications:
      i. Fastening gypsum board to steel members less than 0.03 inch (0.76 mm) thick.
      ii. Fastening gypsum board to gypsum board.
   b. Provide steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 inch (0.84 mm) to 0.112 inch (2.84 mm) thick.
   c. Provide corrosion-resistant coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.

4. Asphalt-Saturated Organic Felt: Comply with ASTM D 226, Type I (No. 15 asphalt felt), non-perforated.

5. Sound Attenuation Blankets: Provide un-faced mineral fiber blanket insulation produced by combining mineral fibers manufactured from glass or slag with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing).

9A.3 EXECUTION

A. Examination

1. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, and structural framing, with the Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Preparation

1. Before sprayed-on fireproofing is applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive spray-on fireproofing. Where offset anchor plates are required, provide continuous units fastened to building structure not more that 24 inches (610 mm) on center.

2. After sprayed-on fireproofing has been applied, remove only as much sprayed-on fireproofing as needed to complete installation of gypsum board assemblies without reducing thickness of sprayed-on fireproofing below that required to obtain fire resistive rating indicated. Protect remaining sprayed-on fireproofing from damage.

C. Applying And Finishing Gypsum Board, General

1. Install and finish gypsum panels to comply with ASTM C 840 and GA 216.

2. Install sound attenuation blankets where indicated prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At stairwells and other high walls, install panels horizontally with end abutting joints over studs and staggered.

4. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1/6 mm) of open space between panels. Do not force into place.

5. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edged or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.

6. Attach gypsum panels to steel studs so that the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

7. Attach gypsum panels to framing provided at openings and cutouts.

8. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors, and doors over 32 inches (813 mm) wide. Apply spot grout at each jamb anchor clip and immediately insert gypsum panels into frames.

9. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.

10. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.) except in chase walls that are braced internally.
    a. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 square feet ($0.74m^2$) in area.
    b. Fit gypsum panels around ducts, pipes, and conduits.
    c. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks cut gypsum panels to fit profile formed by structural members. Allow 1/4 inch (6 mm) to 1/2 inch (13 mm) wide joints to install sealant.
    d. There shall be a 3/8" to 1/2" gap between the bottom of the gypsum board and the concrete deck. The gap shall be filled with a 2-hr fire-rated caulk.

11. Isolate perimeter of non-load-bearing gypsum board partitions a structural abutment, except floors, as detailed. Provide 1/4 inch (6 mm) to 1/2 inch (13 mm) wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

12. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim

and closing off sound flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

13. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

D. Gypsum Board Application Methods

1. Single-Layer Application: Install gypsum wallboard panels as follows:
   a. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire resistive-rated assemblies. Use maximum length panels to minimize end joints.

2. Double-Layer Application: Install gypsum backing-board for base layers and gypsum wallboard for face layers.
   a. On partitions/walls, apply base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face layer joints offset at leas one stud or furring member with base layer joints. Stagger joints on opposite sides of partitions.

3. Single-Layer Fastening Methods: Apply gypsum panels to supports with screws.

4. Double-Layer Fastening Methods: Apply base layer of gypsum panels and face layer to base layer as follows:
   a. Fasten both base layers and face layers separately to supports with screws.

E. Finishing Gypsum Board Assemblies

1. Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; and fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.

2. Pre-fill open joints, rounded or beveled edges, and damaged areas using setting type joint compound.

3. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.

4. Provide the following levels of gypsum board finish per GA 214.
   a. Level 1 for ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire resistive rated assemblies and sound-rated assemblies.
   b. Level 2 where water-resistant gypsum backing board panels from substrates for tile, and where indicated.
   c. Level 4 for gypsum board surfaces indicated to receive wall coverings.
   d. Level 5 for gypsum board surfaces indicated to receive gloss and semi-gloss enamels, non-textured flat paints, and where indicated.

5. For Level 4 gypsum board finish, embed tape in finishing compounds plus two separate coats applied over joints, angles, fastener heads, and trim accessories using the following combination of joint compounds (not including pre-fill), and sand between coats and after last coat:
   a. Embedding and First Coat: Setting type joint compound.
   b. Fill (second) Coat: Setting type joint compound.

c. Finish (Third) Coat: Ready-mixed, drying type, all purpose or topping compound.

6. Where Level 5 gypsum board finish is indicated, apply joint compound combination specified for Level 4 plus a thin, uniform skim coat of joint compound over entire surface. Use joint compound specified for the finish (third coat) or a product specially formulated for this purpose and acceptable to gypsum board manufacturer. Produce surfaces free of tool marks and ridges ready for decoration of type indicated.

7. Where Level 2 gypsum board finish is indicated, apply joint compound specified for first coat in addition to embedding coat.

8. Where Level 1 gypsum board finish is indicated, apply joint compound specified for embedding coat.

9. Finish water-resistant gypsum backing-board forming base for ceramic tile to comply with ASTM C 840 and board manufacturer's directions for treatment of joint behind tile.

10. Finish cementitious backer units to comply with unit manufacturer's directions.

F. Cleaning And Protection

1. Promptly remove any residual joint compound from adjacent surfaces.

2. Provide final protection and maintain conditions, in a manner suitable to the Installer that shall ensure gypsum board assemblies shall remain without damage or deterioration at time of Substantial Completion.

SECTION 9B – PAINTING

9B.1 GENERAL.-

A. Scope.- Furnish materials and application labor necessary to provide paint and transparent finishes on visible new exterior and interior materials and surfaces not noted or specified to be delivered with factory or shop applied finish, not specifically noted or specified as requiring no paint or transparent finish, and not specified to be finished in another section. Also finish those concealed surfaces so specified. In addition, refinish existing painted and transparent finish surfaces as indicated on the drawings.

B. General.- Carefully examine each specification section to determine exact extent of priming and finishes that will be provided under other Divisions. Include in the work of this Section all other priming and finishing work.

1. Preparation of surfaces to be finished.- Executed under various sections (examine for extent).

9B.2 APPLICABLE DOCUMENTS.- The following specifications and standards of the issues currently in force, form a part of this section, and are applicable as specified herein:

A. American Society for Testing and materials (ASTM) Publications.-

D 362 Industrial Grade Toluene

B. Structural Steel Paint Council (SSPC). – Surface Preparation

9C.3 MATERIALS.-

A. General.- The materials listed below are as noted for reference only. These products have been chosen as the basis of the specification because they represent the required quality, reputation, completeness of product line, formulated color range, and established finish systems. Equal products of a manufacturer listed below may be submitted for approval by written list showing a product-by-product comparison with the specified products. The submission shall include a label from the container of each proposed product and a breakdown of the composition of each product. "Professional," "Maintenance" or "Painters" line products will not be acceptable in lieu of top quality retail line products unless the submission is accompanied by a notarized statement from the top official of the manufacturing firm stating that such products equal or exceed the durability, color retention and washability of the firm's top quality retail line. When standard color substitutes are proposed, the request must be accompanied by samples to demonstrate their color match. When special color substitutes are proposed, their appearance, and color match may be evidenced by an official written statement from the manufacturer that satisfactory colors will be delivered based on samples which will be submitted sufficiently in advance of delivery to permit resubmittal until appearance and color match are approved. Mark each sample so as to identify the original selection for which it is being proposed as a substitute. Insofar as possible, painting and finishing materials shall be of one brand.

1. Known Acceptable Sources:

Zinsser Co. Inc. – Perma-White	White
VALPAC Inc – Valprene VI 250	White
Fiberlock Technologies, Inc. –Mildew Pro™	White
Sentinel Products, Inc. -247	White

Manufacturer shall certify that colors selected may be re-ordered and obtained in local area, regardless of quality, for a period of not less than 5 years at not more than normal retail price for his products.

2. Workmanship requirements.-

3. Application.- Skilled mechanics shall apply these materials. Execute this work in accordance with best practices recognized for the class of work and grade, type, and kinds of materials specified.

4. Drying.- Do not apply a succeeding coat until preceding coat is dry and hard.

5. Paint.- Use without thinning or adulterating, unless specified otherwise by the manufacturer.

6. Sanding.- Sand each undercoat on interior wood or metal finishes thoroughly and uniformly with No. 80 sandpaper.

7. Brushes.- Lay on brush applied coat so as not to show brush marks.

8. Rollers.- When paint is applied by roller the surface shall be double rolled for each coat by cross-rolling in a 90 degree pattern.

9. Paint film thickness.- Not less than two nor more than 2-1/2 wet mils per coat.

B. Preparation Of Surfaces.-

1. General.- Complete the work required in the following subparagraphs before applying any of the coats specified under finish requirements. Surfaces shall be clean, smooth, and dry at the time of painting. Do not apply paint or transparent finishes under conditions of weather or temperature unsuitable for executing a first-class job. When surfaces are unsuitable for the application of acceptable finishes submit notification of this fact in sufficient time for conditions to be corrected. Start of work implies acceptance of these surfaces and later claims of defects in such work shall in no way change the requirements of this Specification for acceptable work.

2. Gypsum board.- Remove all foreign matter. File all pits flush and smooth with spackle.

3. Colors.- WHITE

   a. General.- Colors as shown on the drawings shall be considered final, but the right is reserved to vary the value and intensity of any color before application of the final coat. Therefore, no final work shall be done until the base coats have been inspected and approved by the Contracting Officer's Representative. Base coats shall be tinted the same as finish colors, but each coat shall be different in value. Generally, the final coat shall match the color selected, the next-to-last coat shall be lightened by adding 25 percent white and the second-to-last coat shall be lightened by adding 50 percent white. Additional base coats shall be applied untinted.
   b. Schedule.- Colors for surfaces required to be painted are scheduled on the drawings. If a selection for any such surface has been omitted, request these selections in sufficient time to permit review by the Contracting Officer's Representative and revision of the selection when necessary. The colors are to be determined.
   c. Selection and mixing.- Selected colors are from the Sherwin Williams standard color system, unless otherwise noted on drawings. If another manufacturer's paint is approved for use, these colors shall be matched exactly. Colors, regardless of quantity, shall be mixed by the manufacturer, using equipment and methods that provide scientifically accurate proportioning of pigments. No colors shall be mixed on the job.

C. Finish Systems.-

1. General.- New surfaces - The following coats are required in addition to any shop-applied coats or preparatory work required above or in other Sections. Paint and stain shall be of selected approved colors. Paint finish on specific surfaces shall have surface sheen as scheduled or, where not scheduled, as directed. Select hardwood and hardwood veneer (except hardwood edging of painted shelves, etc.) shall receive transparent finish except where specifically shown to receive another finish.

2. Coverage.- The number of coats required under Finishes shall be considered as minimum only and additional coats shall be provided where necessary to achieve full coverage of the surface. Some accent colors may require an additional base coat of paint in white color to achieve full coverage.

3. Application.- Except where otherwise specified or approved, apply finishes by the following methods:

   a. Walls - Brush or roller.

4. Interior finishes.-

   a. Gypsum board.-

Paint finish	-Semi-gloss
Preparation	-Texture mixed with water and rolled on to match approved sample
First coat	-Latex Wall Primer
Second coat	-Alkyd

9B.5 QUALITY ASSURANCE.-

A. Special Guarantee.- Duration two years.

B. Defects.- This work shall remain in first-class condition as determined by the Contracting Officer's Representative's observation. Failure of work will necessitate repainting of similar surfaces within the area involved.

C. Submittals.- Conform to procedures specified and the requirements below.

Samples - The following submissions may be required.

Paint - Each color and sheen on 12 x 12 inch white cardboard panels.

A representative area of each type surface may be required to be finished on the project for approval. Such approved surfaces will be the standard for like surfaces through the job.

D. Omissions.- The omission of Specifications for a particular finish system does not determine that such finish is not required unless the project does not contain material normally requiring such finish or unless such material is specifically noted or specified as not requiring finish. Submit notice of such omissions during bidding. Failure to do so shall not relieve the Contractor from the responsibility for providing a first-class finish, using an approved system, on all materials and surfaces not specifically exempted.

E. Coordination Of Materials.- Wherever the required shop-applied prime coats are not compatible with the specified finish system, the Contractor shall submit notice and such condition shall be rectified immediately as directed by the Contracting Officer's Representative.

F. Relation With Other Trades.- Where painting is required behind items of equipment, the installing trade is to remove such work temporarily and reconnect them after completion of painting. Notify such trades in sufficient time to permit proper coordination of the work.

G. Containers And Labels.- Materials specified or approved as to manufacturer, brand, and quality must be delivered in unbroken original packages or containers. Such packages or containers must bear brand and manufacturer's name and, where special directions are given, apply materials strictly in accordance with same.

H. Schedule Of Finishes.- After receiving approval of proposed finish products, and before starting work, submit in triplicate a list showing the manufacturer's name and product used on each different surface. This schedule will be used by the Owner as a permanent record.

I. Protections.-

a. Other work.- Protect work of other trades against damage or injury. Work damaged as a result of execution of painting and finishing work shall be satisfactorily repaired or, if it cannot be properly repaired, it shall be replaced with new work. During painting operations, mask finish hardware that is not required to be painted.
b. Work space.- Any space used for mixing or storing materials for the work of this Section shall be carefully protected from damage, staining, etc., and shall be left in first-class condition.
c. Concrete floors.- Where concrete floors are scheduled to be left visible, they shall be carefully covered and protected from paint spots, spills, etc. Any paint on such floors must be completely removed.

J. Clean-Up.- Upon completion of this work, remove paint from other finished or prefinished surfaces such as transparent finish wood, ceiling grid, etc., and from unfinished surfaces such as tile, glass, aluminum, hardware, etc. Remove rubbish and accumulated materials connected with this work from the premises.

ATTACHMENT 1

Guidelines on Assessment and Remediation of Fungi in Indoor Environments

Go Back to DOHMH Page

Fungi in Indoor Environments : Environmental & Occupational Disease Epidemiology : NYC DOHMH

EODE

Guidelines on Assessment and Remediation of Fungi in Indoor Environments

Executive Summary

On May 7, 1993, the New York City Department of Health (DOH), the New York City Human Resources Administration (HRA), and the Mt. Sinai Occupational Health Clinic convened an expert panel on *Stachybotrys atra* in Indoor Environments. The purpose of the panel was to develop policies for medical and environmental evaluation and intervention to address *Stachybotrys atra* (now known as *Stachybotrys chartarum* (SC)) contamination. The original guidelines were developed because of mold growth problems in several New York City buildings in the early 1990's. This document revises and expands the original guidelines to include all fungi (mold). It is based both on a review of the literature regarding fungi and on comments obtained by a review panel consisting of experts in the fields of microbiology and health sciences. It is intended for use by building engineers and management, but is available for general distribution to anyone concerned about fungal contamination, such as environmental consultants, health professionals, or the general public.

We are expanding the guidelines to be inclusive of all fungi for several reasons:

- Many fungi (e.g., species of *Aspergillus, Penicillium, Fusarium, Trichoderma,* and *Memnoniella*) in addition to SC can produce potent mycotoxins, some of which are identical to compounds produced by SC. Mycotoxins are fungal metabolites that have been identified as toxic agents. For this reason, SC cannot be treated as uniquely toxic in indoor environments.
- People performing renovations/cleaning of widespread fungal contamination may be at risk for developing Organic Dust Toxic Syndrome (ODTS) or Hypersensitivity Pneumonitis (HP). ODTS may occur after a *single heavy* exposure to dust contaminated with fungi and produces flu-like symptoms. It differs from HP in that it is not an immune-mediated disease and does not require repeated exposures to the same causative agent. A variety of biological agents may cause ODTS including common species of fungi. HP may occur after repeated exposures to an allergen and can result in permanent lung damage.
- Fungi can cause allergic reactions. The most common symptoms are runny nose, eye irritation, cough, congestion, and aggravation of asthma.

Fungi are present almost everywhere in indoor and outdoor environments. The most common symptoms of fungal exposure are runny nose, eye irritation, cough, congestion, and aggravation of asthma. Although there is evidence documenting severe health effects of fungi in humans, most of this evidence is derived from ingestion of contaminated foods (i.e., grain and peanut products) or occupational exposures in agricultural settings where inhalation exposures were very high. With the possible exception of remediation to very heavily contaminated indoor environments, such high-level exposures are not expected to occur while performing remedial work.

There have been reports linking health effects in office workers to offices contaminated with moldy surfaces and in residents

of homes contaminated with fungal growth. Symptoms, such as fatigue, respiratory ailments, and eye irritation were typically observed in these cases. Some studies have suggested an association between SC and pulmonary hemorrhage/hemosiderosis in infants, generally those less than six months old. Pulmonary hemosiderosis is an uncommon condition that results from bleeding in the lungs. The cause of this condition is unknown, but may result from a combination of environmental contaminants and conditions (e.g., smoking, fungal contaminants and other bioaerosols, and water-damaged homes), and currently its association with SC is unproven.

The focus of this guidance document addresses mold contamination of building components (walls, ventilation systems, support beams, etc.) that are chronically moist or water damaged. Occupants should address common household sources of mold, such as mold found in bathroom tubs or between tiles with household cleaners. Moldy food (e.g., breads, fruits, etc.) should be discarded.

Building materials supporting fungal growth must be remediated *as rapidly as possible* in order to ensure a healthy environment. Repair of the defects that led to water accumulation (or elevated humidity) should be conducted in conjunction with or prior to fungal remediation. Specific methods of assessing and remediating fungal contamination should be based on the extent of visible contamination and underlying damage. The simplest and most expedient remediation that is reasonable, and properly and safely removes fungal contamination, should be used. Remediation and assessment methods are described in this document.

The use of respiratory protection, gloves, and eye protection is recommended. Extensive contamination, particularly if heating, ventilating, air conditioning (HVAC) systems or large occupied spaces are involved, should be assessed by an experienced health and safety professional and remediated by personnel with training and experience handling environmentally contaminated materials. Lesser areas of contamination can usually be assessed and remediated by building maintenance personnel. In order to prevent contamination from recurring, underlying defects causing moisture buildup and water damage must be addressed. Effective communication with building occupants is an essential component of all remedial efforts.

Fungi in buildings may cause or exacerbate symptoms of allergies (such as wheezing, chest tightness, shortness of breath, nasal congestion, and eye irritation), especially in persons who have a history of allergic diseases (such as asthma and rhinitis). Individuals with persistent health problems that appear to be related to fungi or other bioaerosol exposure should see their physicians for a referral to practitioners who are trained in occupational/environmental medicine or related specialties and are knowledgeable about these types of exposures. Decisions about removing individuals from an affected area must be based on the results of such medical evaluation, and be made on a case-by-case basis. Except in cases of widespread fungal contamination that are linked to illnesses throughout a building, building-wide evacuation is not indicated.

In summary, prompt remediation of contaminated material and infrastructure repair is the primary response to fungal contamination in buildings. Emphasis should be placed on preventing contamination through proper building and HVAC system maintenance and prompt repair of water damage.

This document is not a legal mandate and should be used as a guideline. Currently there are no United States Federal, New York State, or New York City regulations for evaluating potential health effects of fungal contamination and remediation. These guidelines are subject to change as more information regarding fungal contaminants becomes available.

top of page

Introduction

On May 7, 1993, the New York City Department of Health (DOH), the New York City Human Resources Administration (HRA), and the Mt. Sinai Occupational Health Clinic convened an expert panel on *Stachybotrys atra* in Indoor Environments. The purpose of the panel was to develop policies for medical and environmental evaluation and intervention to address *Stachybotrys atra* (now known as *Stachybotrys chartarum* (SC)) contamination. The original guidelines were developed because of mold growth problems in several New York City buildings in the early 1990's. This document revises and expands the original guidelines to include all fungi (mold). It is based both on a review of the literature regarding fungi and on comments obtained by a review panel consisting of experts in the fields of microbiology and health sciences. It is intended for use by building engineers and management, but is available for general distribution to anyone concerned about fungal contamination, such as environmental consultants, health professionals, or the general public.

This document contains a discussion of potential health effects; medical evaluations; environmental assessments; protocols for remediation; and a discussion of risk communication strategy. The guidelines are divided into four sections:

1. Health Issues; 2. Environmental Assessment; 3. Remediation; and 4. Hazard Communication.

We are expanding the guidelines to be inclusive of all fungi for several reasons:

- Many fungi (e.g., species of *Aspergillus, Penicillium, Fusarium, Trichoderma,* and *Memnoniella*) in addition to SC can produce potent mycotoxins, some of which are identical to compounds produced by SC.[1, 2, 3, 4] Mycotoxins are fungal metabolites that have been identified as toxic agents. For this reason, SC cannot be treated as uniquely toxic in indoor environments.
- People performing renovations/cleaning of widespread fungal contamination may be at risk for developing Organic Dust Toxic Syndrome (ODTS) or Hypersensitivity Pneumonitis (HP). ODTS may occur after a *single heavy* exposure to dust contaminated with fungi and produces flu-like symptoms. It differs from HP in that it is not an immune-mediated disease and does not require repeated exposures to the same causative agent. A variety of biological agents may cause ODTS including common species of fungi. HP may occur after repeated exposures to an allergen and can result in permanent lung damage.[5, 6, 7, 8, 9, 10]
- Fungi can cause allergic reactions. The most common symptoms are runny nose, eye irritation, cough, congestion, and aggravation of asthma.[11, 12]

Fungi are present almost everywhere in indoor and outdoor environments. The most common symptoms of fungal exposure are runny nose, eye irritation, cough, congestion, and aggravation of asthma. Although there is evidence documenting severe health effects of fungi in humans, most of this evidence is derived from ingestion of contaminated foods (i.e., grain and peanut products) or occupational exposures in agricultural settings where inhalation exposures were very high.[13, 14] With the possible exception of remediation to very heavily contaminated indoor environments, such high level exposures are not expected to occur while performing remedial work.[15]

There have been reports linking health effects in office workers to offices contaminated with moldy surfaces and in residents of homes contaminated with fungal growth.[12, 16, 17, 18, 19, 20] Symptoms, such as fatigue, respiratory ailments, and eye irritation were typically observed in these cases.

Some studies have suggested an association between SC and pulmonary hemorrhage/hemosiderosis in infants, generally those less than six months old. Pulmonary hemosiderosis is an uncommon condition that results from bleeding in the lungs. The cause of this condition is unknown, but may result from a combination of environmental contaminants and conditions (e.g., smoking, other microbial contaminants, and water-damaged homes), and currently its association with SC is unproven.[21, 22, 23]

The focus of this guidance document addresses mold contamination of building components (walls, ventilation systems, support beams, etc.) that are chronically moist or water damaged. Occupants should address common household sources of mold, such as mold found in bathroom tubs or between tiles with household cleaners. Moldy food (e.g., breads, fruits, etc.) should be discarded.

This document is not a legal mandate and should be used as a guideline. Currently there are no United States Federal, New York State, or New York City regulations for evaluating potential health effects of fungal contamination and remediation. These guidelines are subject to change as more information regarding fungal contaminants becomes available.

top of page

1. Health Issues

1.1 Health Effects

Inhalation of fungal spores, fragments (parts), or metabolites (e.g., mycotoxins and volatile organic compounds) from a wide variety of fungi may lead to or exacerbate immunologic (allergic) reactions, cause toxic effects, or cause infections.[11, 12, 24]

There are only a limited number of documented cases of health problems from indoor exposure to fungi. The intensity of exposure and health effects seen in studies of fungal exposure in the indoor environment was typically much less severe than those that were experienced by agricultural workers but were of a long-term duration.[5-10, 12, 14, 16-20, 25-27] Illnesses can result from both high level, short-term exposures and lower level, long-term exposures. The most common symptoms reported from exposures in indoor environments are runny nose, eye irritation, cough, congestion, aggravation of asthma, headache, and fatigue.[11, 12, 16-20]

The presence of fungi on building materials as identified by a visual assessment or by bulk/surface sampling results does not necessitate that people will be exposed or exhibit health effects. In order for humans to be exposed indoors, fungal spores, fragments, or metabolites must be released into the air and inhaled, physically contacted (dermal exposure), or ingested. Whether or not symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the amount of exposure, and the susceptibility of exposed persons. Susceptibility varies with the genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, state of health, and concurrent exposures. For these reasons, and because measurements of exposure are not standardized and biological markers of exposure to fungi are largely unknown, it is not possible to determine "safe" or "unsafe" levels of exposure for people in general.

1.1.1 Immunological Effects

Immunological reactions include asthma, HP, and allergic rhinitis. Contact with fungi may also lead to dermatitis. It is thought that these conditions are caused by an immune response to fungal agents. The most common symptoms associated with allergic reactions are runny nose, eye irritation, cough, congestion, and aggravation of asthma.[11, 12] HP may occur after repeated exposures to an allergen and can result in permanent lung damage. HP has typically been associated with repeated heavy exposures in agricultural settings but has also been reported in office settings.[25, 26, 27] Exposure to fungi through renovation work may also lead to initiation or exacerbation of allergic or respiratory symptoms.

1.1.2 Toxic Effects

A wide variety of symptoms have been attributed to the toxic effects of fungi. Symptoms, such as fatigue, nausea, and headaches, and respiratory and eye irritation have been reported. Some of the symptoms related to fungal exposure are non-specific, such as discomfort, inability to concentrate, and fatigue.[11, 12, 16-20] Severe illnesses such as ODTS and pulmonary hemosiderosis have also been attributed to fungal exposures.[5-10, 21, 22]

ODTS describes the abrupt onset of fever, flu-like symptoms, and respiratory symptoms in the hours following a *single, heavy* exposure to dust containing organic material including fungi. It differs from HP in that it is not an immune-mediated disease and does not require repeated exposures to the same causative agent. ODTS may be caused by a variety of biological agents including common species of fungi (e.g., species of *Aspergillus* and *Penicillium*). ODTS has been documented in farm workers handling contaminated material but is also of concern to workers performing renovation work on building materials contaminated with fungi.[5-10]

Some studies have suggested an association between SC and pulmonary hemorrhage/hemosiderosis in infants, generally those less than six months old. Pulmonary hemosiderosis is an uncommon condition that results from bleeding in the lungs. The cause of this condition is unknown, but may result from a combination of environmental contaminants and conditions (e.g., smoking, fungal contaminants and other bioaerosols, and water-damaged homes), and currently its association with SC is unproven.[21, 22, 23]

1.1.3 Infectious Disease

Only a small group of fungi have been associated with infectious disease. Aspergillosis is an infectious disease that can occur in immunosuppressed persons. Health effects in this population can be severe. Several species of *Aspergillus* are known to cause aspergillosis. The most common is *Aspergillus fumigatus*. Exposure to this common mold, even to high concentrations, is unlikely to cause infection in a healthy person.[11, 24]

Exposure to fungi associated with bird and bat droppings (e.g., *Histoplasma capsulatum* and *Cryptococcus neoformans*) can lead to health effects, usually transient flu-like illnesses, in healthy individuals. Severe health effects are primarily encountered in immunocompromised persons.[24, 28, 29]

1.2 Medical Evaluation

Individuals with persistent health problems that appear to be related to fungi or other bioaerosol exposure should see their physicians for a referral to practitioners who are trained in occupational/environmental medicine or related specialties and are knowledgeable about these types of exposures. Infants (less than 12 months old) who are experiencing non-traumatic nosebleeds or are residing in dwellings with damp or moldy conditions and are experiencing breathing difficulties should receive a medical evaluation to screen for alveolar hemorrhage. Following this evaluation, infants who are suspected of having alveolar hemorrhaging should be referred to a pediatric pulmonologist. Infants diagnosed with pulmonary hemosiderosis and/or pulmonary hemorrhaging should not be returned to dwellings until remediation and air testing are completed.

Clinical tests that can determine the source, place, or time of exposure to fungi or their products are not currently available. Antibodies developed by exposed persons to fungal agents can only document that exposure has occurred. Since exposure to fungi routinely occurs in both outdoor and indoor environments this information is of limited value.

1.3 Medical Relocation

Infants (less than 12 months old), persons recovering from recent surgery, or people with immune suppression, asthma, hypersensitivity pneumonitis, severe allergies, sinusitis, or other chronic inflammatory lung diseases may be at greater risk for developing health problems associated with certain fungi. Such persons should be removed from the affected area during remediation (see Section 3, Remediation). Persons diagnosed with fungal related diseases should not be returned to the affected areas until remediation and air testing are completed.

Except in cases of widespread fungal contamination that are linked to illnesses throughout a building, a building-wide evacuation is not indicated. A trained occupational/environmental health practitioner should base decisions about medical removals in the occupational setting on the results of a clinical assessment.

top of page

2. Environmental Assessment

The presence of mold, water damage, or musty odors should be addressed immediately. In all instances, any source(s) of water must be stopped and the extent of water damaged determined. Water damaged materials should be dried and repaired. Mold damaged materials should be remediated in accordance with this document (see Section 3, Remediation).

2.1 Visual Inspection

A visual inspection is the most important initial step in identifying a possible contamination problem. The extent of any water damage and mold growth should be visually assessed. This assessment is important in determining remedial strategies. Ventilation systems should also be visually checked, particularly for damp filters but also for damp conditions elsewhere in the system and overall cleanliness. Ceiling tiles, gypsum wallboard (sheetrock), cardboard, paper, and other cellulosic surfaces should be given careful attention during a visual inspection. The use of equipment such as a boroscope, to view spaces in ductwork or behind walls, or a moisture meter, to detect moisture in building materials, may be helpful in identifying hidden sources of fungal growth and the extent of water damage.

2.2 Bulk/Surface Sampling

a. Bulk or surface sampling is not required to undertake a remediation. Remediation (as described in Section 3, Remediation) of visually identified fungal contamination should proceed without further evaluation.
b. Bulk or surface samples may need to be collected to identify specific fungal contaminants as part of a medical evaluation if occupants are experiencing symptoms which may be related to fungal exposure or to identify the presence or absence of mold if a visual inspection is equivocal (e.g., discoloration, and staining).
c. An individual trained in appropriate sampling methodology should perform bulk or surface sampling. Bulk samples are usually collected from visibly moldy surfaces by scraping or cutting materials with a clean tool into a clean plastic bag. Surface samples are usually collected by wiping a measured area with a sterile swab or by stripping the suspect surface with clear tape. Surface sampling is less destructive than bulk sampling. Other sampling methods may also be available. A laboratory specializing in mycology should be consulted for specific sampling and delivery

instructions.

2.3 Air Monitoring

a. Air sampling for fungi should not be part of a routine assessment. This is because decisions about appropriate remediation strategies can usually be made on the basis of a visual inspection. In addition, air-sampling methods for some fungi are prone to false negative results and therefore cannot be used to definitively rule out contamination.
b. Air monitoring may be necessary if an individual(s) has been diagnosed with a disease that is or may be associated with a fungal exposure (e.g., pulmonary hemorrhage/hemosiderosis, and aspergillosis).
c. Air monitoring may be necessary if there is evidence from a visual inspection or bulk sampling that ventilation systems may be contaminated. The purpose of such air monitoring is to assess the extent of contamination throughout a building. It is preferable to conduct sampling while ventilation systems are operating.
d. Air monitoring may be necessary if the presence of mold is suspected (e.g., musty odors) but cannot be identified by a visual inspection or bulk sampling (e.g., mold growth behind walls). The purpose of such air monitoring is to determine the location and/or extent of contamination.
e. If air monitoring is performed, for comparative purposes, outdoor air samples should be collected concurrently at an air intake, if possible, and at a location representative of outdoor air. For additional information on air sampling, refer to the American Conference of Governmental Industrial Hygienists' document, "Bioaerosols: Assessment and Control."
f. Personnel conducting the sampling must be trained in proper air sampling methods for microbial contaminants. A laboratory specializing in mycology should be consulted for specific sampling and shipping instructions.

2.4 Analysis of Environmental Samples

Microscopic identification of the spores/colonies requires considerable expertise. These services are not routinely available from commercial laboratories. Documented quality control in the laboratories used for analysis of the bulk/surface and air samples is necessary. The American Industrial Hygiene Association (AIHA) offers accreditation to microbial laboratories (Environmental Microbiology Laboratory Accreditation Program (EMLAP)). Accredited laboratories must participate in quarterly proficiency testing (Environmental Microbiology Proficiency Analytical Testing Program (EMPAT)).

Evaluation of bulk/surface and air sampling data should be performed by an experienced health professional. The presence of few or trace amounts of fungal spores in bulk/surface sampling should be considered background. Amounts greater than this or the presence of fungal fragments (e.g., hyphae, and conidiophores) may suggest fungal colonization, growth, and/or accumulation at or near the sampled location.[30] Air samples should be evaluated by means of comparison (i.e., indoors to outdoors) and by fungal type (e.g., genera, and species). In general, the levels and types of fungi found should be similar indoors (in non-problem buildings) as compared to the outdoor air. Differences in the levels or types of fungi found in air samples may indicate that moisture sources and resultant fungal growth may be problematic.

top of page

3. Remediation

In all situations, the underlying cause of water accumulation must be rectified or fungal growth will recur. Any initial water infiltration should be stopped and cleaned immediately. An immediate response (within 24 to 48 hours) and thorough clean up, drying, and/or removal of water damaged materials will prevent or limit mold growth. If the source of water is elevated humidity, relative humidity should be maintained at levels below 60% to inhibit mold growth.[31] Emphasis should be on ensuring proper repairs of the building infrastructure, so that water damage and moisture buildup does not recur.

Five different levels of abatement are described below. The size of the area impacted by fungal contamination primarily determines the type of remediation. The sizing levels below are based on professional judgement and practicality; currently there is not adequate data to relate the extent of contamination to frequency or severity of health effects. **The goal of remediation is to remove or clean contaminated materials in a way that prevents the emission of fungi and dust contaminated with fungi from leaving a work area and entering an occupied or non-abatement area, while protecting the health of workers performing the abatement.** The listed remediation methods were designed to achieve this goal, however, due to the general nature of these methods it is the responsibility of the people conducting remediation to ensure the methods enacted are adequate. The listed remediation methods are not meant to exclude other

similarly effective methods. Any changes to the remediation methods listed in these guidelines, however, should be carefully considered prior to implementation.

Non-porous (e.g., metals, glass, and hard plastics) and semi-porous (e.g., wood, and concrete) materials that are structurally sound and are visibly moldy can be cleaned and reused. Cleaning should be done using a detergent solution. Porous materials such as ceiling tiles and insulation, and wallboards with more than a small area of contamination should be removed and discarded. Porous materials (e.g., wallboard, and fabrics) that can be cleaned, can be reused, but should be discarded if possible. A professional restoration consultant should be contacted when restoring porous materials with more than a small area of fungal contamination. All materials to be reused should be dry and visibly free from mold. Routine inspections should be conducted to confirm the effectiveness of remediation work.

The use of gaseous, vapor-phase, or aerosolized biocides for remedial purposes is **not** recommended. The use of biocides in this manner can pose health concerns for people in occupied spaces of the building and for people returning to the treated space if used improperly. Furthermore, the effectiveness of these treatments is unproven and does not address the possible health concerns from the presence of the remaining non-viable mold. For additional information on the use of biocides for remedial purposes, refer to the American Conference of Governmental Industrial Hygienists' document, "Bioaerosols: Assessment and Control."

3.1 *Level I*: Small Isolated Areas (10 sq. ft or less) - e.g., ceiling tiles, small areas on walls

a. Remediation can be conducted by regular building maintenance staff. Such persons should receive training on proper clean up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
b. Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should be worn.
c. The work area should be unoccupied. Vacating people from spaces adjacent to the work area is not necessary but is recommended in the presence of infants (less than 12 months old), persons recovering from recent surgery, immune suppressed people, or people with chronic inflammatory lung diseases (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).
d. Containment of the work area is not necessary. Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.
e. Contaminated materials that cannot be cleaned should be removed from the building in a sealed plastic bag. There are no special requirements for the disposal of moldy materials.
f. The work area and areas used by remedial workers for egress should be cleaned with a damp cloth and/or mop and a detergent solution.
g. All areas should be left dry and visibly free from contamination and debris.

3.2 *Level II*: Mid-Sized Isolated Areas (10 - 30 sq. ft.) - e.g., individual wallboard panels.

a. Remediation can be conducted by regular building maintenance staff. Such persons should receive training on proper clean up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
b. Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should be worn.
c. The work area should be unoccupied. Vacating people from spaces adjacent to the work area is not necessary but is recommended in the presence of infants (less than 12 months old), persons having undergone recent surgery, immune suppressed people, or people with chronic inflammatory lung diseases (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).
d. The work area should be covered with a plastic sheet(s) and sealed with tape before remediation, to contain dust/debris.
e. Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.
f. Contaminated materials that cannot be cleaned should be removed from the building in sealed plastic bags. There are no special requirements for the disposal of moldy materials.
g. The work area and areas used by remedial workers for egress should be HEPA vacuumed (a vacuum equipped with a High-Efficiency Particulate Air filter) and cleaned with a damp cloth and/or mop and a detergent solution.
h. All areas should be left dry and visibly free from contamination and debris.

3.3 *Level III*: Large Isolated Areas (30 - 100 square feet) - e.g., several wallboard panels.

A health and safety professional with experience performing microbial investigations should be consulted prior to remediation activities to provide oversight for the project.

The following procedures *at a minimum* are recommended:

a. Personnel trained in the handling of hazardous materials and equipped with respiratory protection, (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should be worn.
b. The work area and areas directly adjacent should be covered with a plastic sheet(s) and taped before remediation, to contain dust/debris.
c. Seal ventilation ducts/grills in the work area and areas directly adjacent with plastic sheeting.
d. The work area and areas directly adjacent should be unoccupied. Further vacating of people from spaces near the work area is recommended in the presence of infants (less than 12 months old), persons having undergone recent surgery, immune suppressed people, or people with chronic inflammatory lung diseases (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).
e. Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.
f. Contaminated materials that cannot be cleaned should be removed from the building in sealed plastic bags. There are no special requirements for the disposal of moldy materials.
g. The work area and surrounding areas should be HEPA vacuumed and cleaned with a damp cloth and/or mop and a detergent solution.
h. All areas should be left dry and visibly free from contamination and debris.

If abatement procedures are expected to generate a lot of dust (e.g., abrasive cleaning of contaminated surfaces, demolition of plaster walls) or the visible concentration of the fungi is heavy (blanket coverage as opposed to patchy), then it is recommended that the remediation procedures for Level IV are followed.

3.4 *Level IV*: Extensive Contamination (greater than 100 contiguous square feet in an area)

A health and safety professional with experience performing microbial investigations should be consulted prior to remediation activities to provide oversight for the project. The following procedures are recommended:

a. Personnel trained in the handling of hazardous materials equipped with:
    i. Full-face respirators with high efficiency particulate air (HEPA) cartridges
    ii. Disposable protective clothing covering both head and shoes
    iii. Gloves
b. Containment of the affected area:
    i. Complete isolation of work area from occupied spaces using plastic sheeting sealed with duct tape (including ventilation ducts/grills, fixtures, and any other openings)
    ii. The use of an exhaust fan with a HEPA filter to generate negative pressurization
    iii. Airlocks and decontamination room
c. Vacating people from spaces adjacent to the work area is not necessary but is recommended in the presence of infants (less than 12 months old), persons having undergone recent surgery, immune suppressed people, or people with chronic inflammatory lung diseases (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).
d. Contaminated materials that cannot be cleaned should be removed from the building in sealed plastic bags. The outside of the bags should be cleaned with a damp cloth and a detergent solution or HEPA vacuumed in the decontamination chamber prior to their transport to uncontaminated areas of the building. There are no special requirements for the disposal of moldy materials.
e. The contained area and decontamination room should be HEPA vacuumed and cleaned with a damp cloth and/or mop with a detergent solution and be visibly clean prior to the removal of isolation barriers.
f. Air monitoring should be conducted prior to occupancy to determine if the area is fit to reoccupy.

3.5 *Level V*: Remediation of HVAC Systems

3.5.1 A Small Isolated Area of Contamination (<10 square feet) in the HVAC System

a. Remediation can be conducted by regular building maintenance staff. Such persons should receive training on proper clean up methods, personal protection, and potential health hazards. This training can be performed as part of a

program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

b. Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should be worn.
c. The HVAC system should be shut down prior to any remedial activities.
d. The work area should be covered with a plastic sheet(s) and sealed with tape before remediation, to contain dust/debris.
e. Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.
f. Growth supporting materials that are contaminated, such as the paper on the insulation of interior lined ducts and filters, should be removed. Other contaminated materials that cannot be cleaned should be removed in sealed plastic bags. There are no special requirements for the disposal of moldy materials.
g. The work area and areas immediately surrounding the work area should be HEPA vacuumed and cleaned with a damp cloth and/or mop and a detergent solution.
h. All areas should be left dry and visibly free from contamination and debris.
i. A variety of biocides are recommended by HVAC manufacturers for use with HVAC components, such as, cooling coils and condensation pans. HVAC manufacturers should be consulted for the products they recommend for use in their systems.

3.5.2 Areas of Contamination (>10 square feet) in the HVAC System

A health and safety professional with experience performing microbial investigations should be consulted prior to remediation activities to provide oversight for remediation projects involving more than a small isolated area in an HVAC system. The following procedures are recommended:

a. Personnel trained in the handling of hazardous materials equipped with:
    i. Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended.
    ii. Gloves and eye protection
    iii. Full-face respirators with HEPA cartridges and disposable protective clothing covering both head and shoes should be worn if contamination is greater than 30 square feet.
b. The HVAC system should be shut down prior to any remedial activities.
c. Containment of the affected area:
    i. Complete isolation of work area from the other areas of the HVAC system using plastic sheeting sealed with duct tape.
    ii. The use of an exhaust fan with a HEPA filter to generate negative pressurization.
    iii. Airlocks and decontamination room if contamination is greater than 30 square feet.
d. Growth supporting materials that are contaminated, such as the paper on the insulation of interior lined ducts and filters, should be removed. Other contaminated materials that cannot be cleaned should be removed in sealed plastic bags. When a decontamination chamber is present, the outside of the bags should be cleaned with a damp cloth and a detergent solution or HEPA vacuumed prior to their transport to uncontaminated areas of the building. There are no special requirements for the disposal of moldy materials.
e. The contained area and decontamination room should be HEPA vacuumed and cleaned with a damp cloth and/or mop and a detergent solution prior to the removal of isolation barriers.
f. All areas should be left dry and visibly free from contamination and debris.
g. Air monitoring should be conducted prior to re-occupancy with the HVAC system in operation to determine if the area (s) served by the system are fit to reoccupy.
h. A variety of biocides are recommended by HVAC manufacturers for use with HVAC components, such as, cooling coils and condensation pans. HVAC manufacturers should be consulted for the products they recommend for use in their systems.

top of page

4. Hazard Communication

When fungal growth requiring large-scale remediation is found, the building owner, management, and/or employer should notify occupants in the affected area(s) of its presence. Notification should include a description of the remedial measures to be taken and a timetable for completion. Group meetings held before and after remediation with full disclosure of plans and results can be an effective communication mechanism. Individuals with persistent health problems that appear to be related to bioaerosol exposure should see their physicians for a referral to practitioners who are trained in

occupational/environmental medicine or related specialties and are knowledgeable about these types of exposures. Individuals seeking medical attention should be provided with a copy of all inspection results and interpretation to give to their medical practitioners.

top of page

Conclusion

In summary, the prompt remediation of contaminated material and infrastructure repair must be the primary response to fungal contamination in buildings. The simplest and most expedient remediation that properly and safely removes fungal growth from buildings should be used. In all situations, the underlying cause of water accumulation must be rectified or the fungal growth will recur. Emphasis should be placed on preventing contamination through proper building maintenance and prompt repair of water damaged areas.

Widespread contamination poses much larger problems that must be addressed on a case-by-case basis in consultation with a health and safety specialist. Effective communication with building occupants is an essential component of all remedial efforts. Individuals with persistent health problems should see their physicians for a referral to practitioners who are trained in occupational/environmental medicine or related specialties and are knowledgeable about these types of exposures.

top of page

Notes and References

1. Bata A, Harrach B, Kalman U, Kis-tamas A, Lasztity R. Macrocyclic Trichothecene Toxins Produced by *Stachybotrys atra* Strains Isolated in Middle Europe. *Applied and Environmental Microbiology* 1985; **49**:678-81.
2. Jarvis B, "Mycotoxins and Indoor Air Quality," *Biological Contaminants in Indoor Environments, ASTM STP 1071*, Morey P, Feely Sr. J, Otten J, Editors, American Society for Testing and Materials, Philadelphia, 1990.
3. Yang C, Johanning E, "Airborne Fungi and Mycotoxins," *Manual of Environmental Microbiology*, Hurst C, Editor in Chief, ASM Press, Washington, D.C., 1996
4. Jarvis B, Mazzola E. Macrocyclic and Other Novel Trichothecenes: Their Structure, Synthesis, and Biological Significance. *Acc. Chem. Res.* 1982; **15**:388-95.
5. Von Essen S, Robbins R, Thompson A, Rennard S. Organic Dust Toxic Syndrome: An Acute Febrile Reaction to Organic Dust Exposure Distinct from Hypersensitivity Pneumonitis. *Clinical Toxicology* 1990; **28(4)**:389-420.
6. Richerson H. Unifying Concepts Underlying the Effects of Organic Dust Exposures. *American Journal of Industrial Medicine* 1990; **17**:139-42.
7. Malmberg P, Rask-Andersen A, Lundholm M, Palmgren U. Can Spores from Molds and Actinomycetes Cause an Organic Dust Toxic Syndrome Reaction?. *American Journal of Industrial Medicine* 1990; **17**:109-10.
8. Malmberg P. Health Effects of Organic Dust Exposure in Dairy Farmers. *American Journal of Industrial Medicine* 1990; **17**:7-15.
9. Yoshida K, Masayuki A, Shukuro A. Acute Pulmonary Edema in a Storehouse of Moldy Oranges: A Severe Case of the Organic Dust Toxic Syndrome. *Archives of Environmental Health* 1989; **44(6)**: 382-84.
10. Lecours R, Laviolette M, Cormier Y. Bronchoalveolar Lavage in Pulmonary Mycotoxicosis. *Thorax* 1986; **41**:924-6.
11. Levetin E. "Fungi," *Bioaerosols*, Burge H, Editor, CRC Press, Boca Raton, Florida, 1995.
12. Husman T. Health Effects of Indoor-air Microorganisms. *Scand J Work Environ Health* 1996; **22**:5-13.
13. Miller J D. Fungi and Mycotoxins in Grain: Implications for Stored Product Research. *J Stored Prod Res* 1995; **31 (1)**:1-16.
14. Cookingham C, Solomon W. "Bioaerosol-Induced Hypersensitivity Diseases," *Bioaerosols*, Burge H, Editor, CRC Press, Boca Raton, Florida, 1995.
15. Rautiala S, Reponen T, Nevalainen A, Husman T, Kalliokoski P. Control of Exposure to Airborne Viable Microorganisms During Remediation of Moldy Buildings; Report of Three Case Studies. *American Industrial Hygiene Association Journal* 1998; **59**:455-60.
16. Dales R, Zwanenburg H, Burnett R, Franklin C. Respiratory Health Effects of Home Dampness and Molds among Canadian Children. *American Journal of Epidemiology* 1991; **134(2)**: 196-203.
17. Hodgson M, Morey P, Leung W, Morrow L, Miller J D, Jarvis B, Robbins H, Halsey J, Storey E. Building-Associated Pulmonary Disease from Exposure to *Stachybotrys chartarum* and *Aspergillus versicolor*. *Journal of Occupational and Environmental Medicine* 1998; **40(3)**241-9.
18. Croft W, Jarvis B, Yatawara C. Airborne Outbreak of Trichothecene Toxicosis. *Atmospheric Environment* 1986; **20(3)** 549-52.

19. DeKoster J, Thorne P. Bioaerosol Concentrations in Noncomplaint, Complaint, and Intervention Homes in the Midwest. *American Industrial Hygiene Association Journal* 1995; **56**:573-80.
20. Johanning E, Biagini R, Hull D, Morey P, Jarvis B, Landbergis P. Health and Immunological Study Following Exposure to Toxigenic Fungi *(Stachybotrys chartarum)* in a Water-Damaged Office Environment. *Int Arch Occup Environ Health* 1996; **68**:207-18.
21. Montana E, Etzel R, Allan T, Horgan T, Dearborn D. Environmental Risk Factor Associated with Pediatric Idiopathic Pulmonary Hemorrhage and Hemosiderosis in a Cleveland Community. *Pediatrics* 1997; **99(1)**
22. Etzel R, Montana E, Sorenson W G, Kullman G, Allan T, Dearborn D. Acute Pulmonary Hemorrhage in Infants Associated with Exposure to *Stachybotrys atra* and Other Fungi. *Ach Pediatr Adolesc Med* 1998; **152**:757-62.
23. CDC. Update: Pulmonary Hemorrhage/Hemosiderosis Among Infants --- Cleveland, Ohio, 1993 - 1996. *MMWR* 2000; **49(9)**: 180-4.
24. Burge H, Otten J. "Fungi," *Bioaerosols Assessment and Control*, Macher J, Editor, American Conference of Industrial Hygienists, Cincinnati, Ohio, 1999.
25. do Pico G. Hazardous Exposure and Lung Disease Among Farm Workers. *Clinics in Chest Medicine* 1992; **13(2)**:311-28.
26. Hodgson M, Morey P, Attfield M, Sorenson W, Fink J, Rhodes W, Visvesvara G. Pulmonary Disease Associated with Cafeteria Flooding. *Archives of Environmental Health* 1985; **40(2)**:96-101.
27. Weltermann B, Hodgson M, Storey E, DeGraff, Jr. A, Bracker A, Groseclose S, Cole S, Cartter M, Phillips D. Hypersensitivity Pneumonitis: A Sentinel Event Investigation in a Wet Building. *American Journal of Industrial Medicine* 1998; **34**:499-505.
28. Band J. "Histoplasmosis," *Occupational Respiratory Diseases*, Merchant J, Editor, U.S. Department of Health and Human Services, Washington D.C., 1986.
29. Bertolini R. "Histoplasmosis A Summary of the Occupational Health Concern," Canadian Centre for Occupational Health and Safety. Hamilton, Ontario, Canada, 1988.
30. Yang C. P&K Microbiology Services, Inc. Microscopic Examination of Sticky Tape or Bulk Samples for the Evaluation and Identification of Fungi. Cherry Hill, New Jersey.
31. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. Thermal Environmental Conditions for Human Occupancy - ASHRAE Standard (ANSI/ASHRAE 55-1992). Atlanta, Georgia, 1992.

top of page

Acknowledgments

The New York City Department of Health would like to thank the following individuals and organizations for participating in the revision of these guidelines. Please note that these guidelines do not necessarily reflect the opinions of the participants nor their organizations.

Name	Company/Institution
Dr. Susan Klitzman	Hunter College
Dr. Philip Morey	AQS Services, Inc
Dr. Donald Ahearn	Georgia State University
Dr. Sidney Crow	Georgia State University
Dr. J. David Miller	Carleton University
Dr. Bruce Jarvis	University of Maryland at College Park
Mr. Ed Light	Building Dynamics, LLC
Dr. Chin Yang	P&K Microbiology Services, Inc
Dr. Harriet Burge	Harvard School of Public Health
Dr. Dorr Dearborn	Rainbow Children's Hospital
Mr. Eric Esswein	National Institute for Occupational Safety and Health
Dr. Ed Horn	The New York State Department of Health
Dr. Judith Schreiber	The New York State Department of Health
Mr. Gregg Recer	The New York State Department of Health
Dr. Gerald Llewellyn	State of Delaware, Division of Public Health
Mr. Daniel Price	Interface Research Corporation

Ms. Sylvia Pryce	The NYC Citywide Office of Occupational Safety and Health
Mr. Armando Chamorro	Ambient Environmental
Ms. Marie-Alix d'Halewyn	Laboratoire de santé publique du Québec
Dr. Elissa A. Favata	Environmental and Occupational Health Associates
Dr. Harriet Ammann	Washington State Department of Health
Mr. Terry Allan	Cuyahoga County Board of Health

We would also like to thank the many others who offered opinions, comments, and assistance at various stages during the development of these guidelines.

Christopher D'Andrea, M.S. of the Environmental and Occupational Disease Epidemiology Unit, was the editor of this document.

For further information regarding this document please contact the New York City Department of Health at 311.

Go Back to DOHMH Page

ATTACHMENT 2

DTW ATCT MOLD REMEDIATION PROJECT CLEARANCE PROTOCOL

Mold Remediation Project Clearance Protocol

PREPARED FOR:

FEDERAL AVIATION ADMINISTRATION

Detroit Metropolitan Wayne County Airport Traffic Control Tower (DTW ATCT)

DETROIT, MICHIGAN

June 13, 2008

PREPARED BY:

Barbara Hebert, CIH
NISC, KANSAS CITY ARTCC DISTRICT TSU

The **DTW ATCT Mold Remediation and Restoration Project** will include the removal of moisture and microbiological-contaminated gypsum board, shaft liner, and insulation.

After Rooms 928 and 428 have passed a thorough visual inspection, and before the outer containment barrier is removed, clearance air sampling will be performed.

Five consecutive samples will be collected inside the containment area using a high volume air sampler and Zefon Air-O-Cell® cassettes. Sampling will be conducted at a flow rate of 15 liters per minute for a period of five minutes each, resulting in a collection volume of 75 liters of air. Environmental conditions may warrant the sample collection period to be reduced to one-minute intervals, in order to reduce the collection of non-microbial particulates that can mask the presence of mold spores.

Three consecutive samples will be collected outside the containment area, but inside the ATCT in a noncomplaint area, in the same manner as above. Sampling will be conducted at a flow rate of 15 liters per minute for a period of five minutes each, resulting in a collection volume of 75 liters of air.

Three consecutive samples will be collected outside of the building, in the same manner as above. Sampling will be conducted at a flow rate of 15 liters per minute for a period of 10 minutes each, resulting in a collection volume of 150 liters of air.

For all samples collected, the high volume air sampler will be calibrated before and after use.

All samples, one lab blank, and a completed Chain of Custody form will be sent to Aerotech Laboratories, Inc., by Federal Express Priority Overnight delivery. The samples will be mailed in a rigid container or box. There is no additional temperature handling requirement.

All samples will be clearly labeled. The sample identification number appearing on the cassette **must** match the identification number shown on the Chain of Custody form. The samples will be analyzed in accordance with **Aerotech Method A001** (equivalent to the cassette manufacturer's recommended analytical procedure) via light microscopy at 600X magnification, with the entire slide (100% of the sample) being analyzed. The results will be reported as a total fungal spore count, in counts per cubic meter (counts/M^3), which includes both viable and non-viable spores.

The area will be considered "clean" when the average airborne total mold spore concentration measured inside the containment area was not statistically higher than the average airborne concentration measured outside the containment area, **and** the **genus level** constituents similar for all samples taken inside the containment, inside the building (but outside of the containment) and outside of the building.

Statistical significance may be determined in the following manner:

A. All containment sample airborne total concentration levels are lower than those taken from outside the containment, or

B. The Z-test score is less than or equal to 1.65 Standard Deviations from the Mean, indicating a 90% confidence interval. The Z-test is carried out by calculating:

$$Z = \frac{Y_I - Y_O}{0.8\,(1/n_I + 1/n_O)^{1/2}}$$

where Y_I is the average of the natural logarithms of the inside samples, Y_O is the average of the natural logarithms of the outside samples, n_I is the number of inside samples and n_O is the number of outside samples.

Alternative A shall be considered first, then if necessary, Alternative B. Should the calculated Z-test score exceed 1.65, the abatement area must be recleaned. An additional set of 10 samples must then be collected, as defined above, in order to establish clearance.

The **genus level** constituents will be evaluated using the Spearman Rank Order Correlation (SROC), which is a statistical technique used to test the direction and strength of the relationship between two variables. It uses the statistic "Rs", which falls between –1 and +1. If the "Rs" value is –1, there is a perfect negative correlation; between –1 and –0.5, there is a strong negative correlation; between –0.5 and 0, there is a weak negative correlation; if 0, there is no correlation; between 0 and 0.5, there is a weak positive correlation; between 0.5 and 1, there is a strong positive correlation; and if 1, there is a perfect positive correlation. Calculated "Rs" values will also be compared to the Critical Values (CV) listed in Table 13.7 of the American Conference of Governmental Industrial Hygienists "Bioaerosols: Assessment and Control", which are drawn from a standard statistical table. Comparing the "Rs" value to the CV permits a methodical acceptance or rejection. If the "Rs" value exceeds the 0.1 confidence level, the populations appear to be related or similar. If the "Rs" value is below the 0.1 confidence level, the populations do not appear to be related or are different. Should the "Rs" value be below the 0.1 confidence level, the remediation area must be recleaned unless a professional opinion can justify rank differences to be insignificant.

Once the abatement area has passed the clearance criteria, the outer containment barrier will be removed and the room will be available for restoration.

Visual inspections and clearance air sampling will be performed upon completion of the mold remediation, but prior to the re-installation of new building materials.

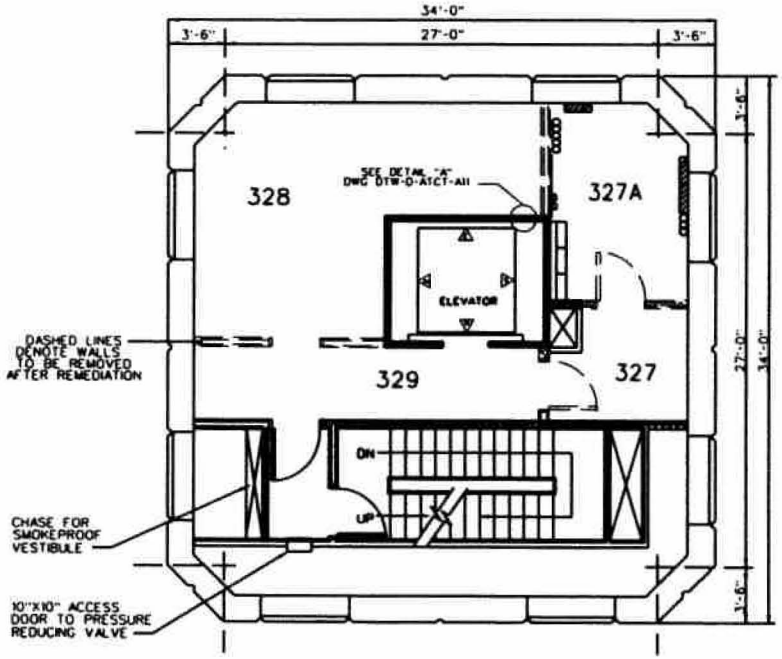
The visual inspection, clearance air sampling, and data interpretation will be conducted by the government-retained Industrial Hygienist.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
GREAT LAKES REGION – CHICAGO, ILLINOIS

MICROBIOLOGICAL REMEDIATION
ATCT
DETROIT METROPOLITAN WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

DRAWING LIST

DRAWING NUMBER	DRAWING NAME	REV.#	DATE
GL-D-414C-CSP	CONSTRUCTION SAFETY PLAN		04/25/07
DTW-D-ATCT-A03	MOISTURE DAMAGE REMEDIATION 3RD FL.	1	08/08/08
DTW-D-ATCT-A04	MOISTURE DAMAGE REMEDIATION 4TH FL.	1	08/08/08
DTW-D-ATCT-A05	MOISTURE DAMAGE REMEDIATION 5TH FL.	1	08/08/08
DTW-D-ATCT-A06	MOISTURE DAMAGE REMEDIATION 6TH FL.	1	08/08/08
DTW-D-ATCT-A07	MOISTURE DAMAGE REMEDIATION 7TH FL.	1	08/08/08
DTW-D-ATCT-A08	MOISTURE DAMAGE REMEDIATION 8TH FL.	1	08/08/08
DTW-D-ATCT-A09	MOISTURE DAMAGE REMEDIATION 9TH FL.	1	08/08/08
DTW-D-ATCT-A10	MOISTURE DAMAGE REMEDIATION 10TH FL.	1	08/08/08
DTW-D-ATCT-A11	MOISTURE DAMAGE REMEDIATION DETAILS	0	08/06/08



THIRD FLOOR SHAFT PLAN

NOT TO SCALE

SCOPE OF WORK

FLOOR 3:

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MCM BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GARFIE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00 AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARTITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL CORRIDOR.

7. PAINT ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT.

8. FURNISH AND INSTALL FIRE-RATED ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE THE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-A11.

ROOM 327

1. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CLEANING PROCEDURES AND PIPE INSULATION REMOVAL/REPLACEMENT.

2. APPROXIMATELY 15 LINEAR FEET OF 18", WATER STAINED AND/OR CONTAMINATED CHILLED AND HEATING WATER PIPE INSULATION SHALL BE REMOVED AND REPLACED.

ROOM 328

1. A MINI CONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING. A NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA.

2. THE EAST (ELEVATOR SHAFT) WALL, UP TO A HEIGHT OF 2', AND THE SOUTH (ELEVATOR SHAFT) WALL, UP TO A HEIGHT OF 2', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

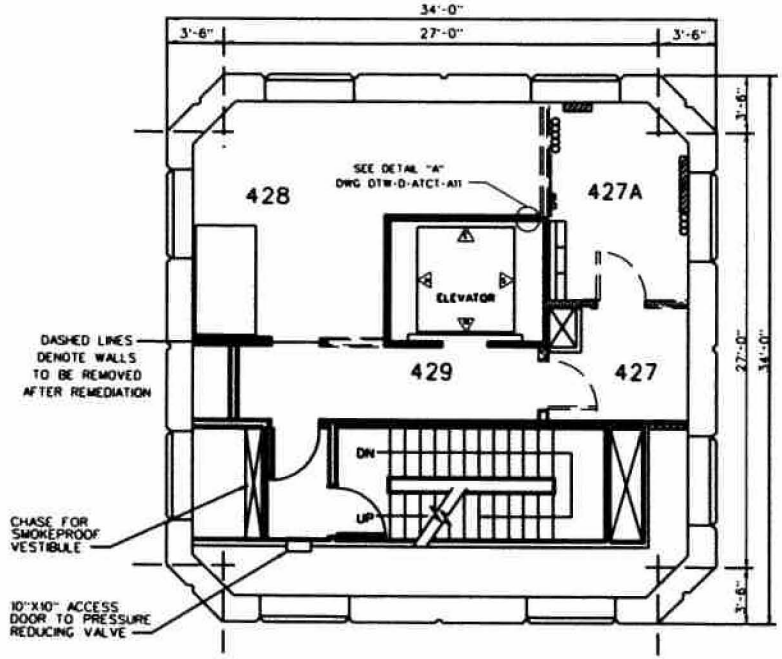
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
3RD FLOOR
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

4				
3				
2				
1	3RD FL MOISTURE DAMAGE			

DTW-D-ATCT-A03

...\03B DTW-D-ATCT-3RD FL REM.dgn 8/8/2008 10:28:02 AM



FOURTH FLOOR SHAFT PLAN

NOT TO SCALE

SCOPE OF WORK

FLOOR 4:

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MCM BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GARFIE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARTITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND THE CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL CORRIDOR.

7. PAINT ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT. PAINT MECHANICAL ENCLOSURE ON THIS FLOOR.

8. FURNISH AND INSTALL FIRE-RESISTANT ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE THE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-A11.

ROOM 427

1. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CLEANING PROCEDURES AND PIPE INSULATION REMOVAL/REPLACEMENT.

2. APPROXIMATELY 4 LINEAR FEET OF 11" AND 6 LINEAR FEET OF 18" WATER STAINED AND/OR CONTAMINATED CHILLED AND HEATING WATER PIPE INSULATION SHALL BE REMOVED AND REPLACED.

ROOM 428

1. A CONTAINMENT AND NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA. A DECONTAMINATION UNIT SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.10 DECONTAMINATION.

2. CLEANUP AND REMOVAL OF MOISTURE AND MICROBIOLOGICAL CONTAMINATED GYPSUM BOARD, SHAFT LINER, AND INSULATION IN THE DTW ATCT ROOM 428 IN ACCORDANCE WITH THE GUIDELINES ESTABLISHED BY THE NEW YORK CITY DEPARTMENT OF HEALTH ENTITLED GUIDELINES ON ASSESSMENT AND REMEDIATION OF FUNGI IN INDOOR ENVIRONMENTS (GARFIE) (SEE SPECIFICATION ATTACHMENT 1).

3. REMOVE GYPSUM BOARD, SHAFT LINER, AND INSULATION TOTALING APPROXIMATELY 243 SQUARE FEET.

A. THE EAST (ELEVATOR SHAFT) WALL, 8' WIDE TO A HEIGHT OF 5' (SURFACE LAYER), 8' WIDE TO A HEIGHT OF 4'6" (CONCEALED LAYER), AND 8' WIDE TO A HEIGHT OF 4' (SHAFT LINER).

B. THE SOUTH (ELEVATOR SHAFT) WALL, 10' WIDE TO A HEIGHT OF 5' (SURFACE LAYER), 10' WIDE TO A HEIGHT OF 4'6" (CONCEALED LAYER), AND 10' WIDE TO A HEIGHT OF 4' (SHAFT LINER).

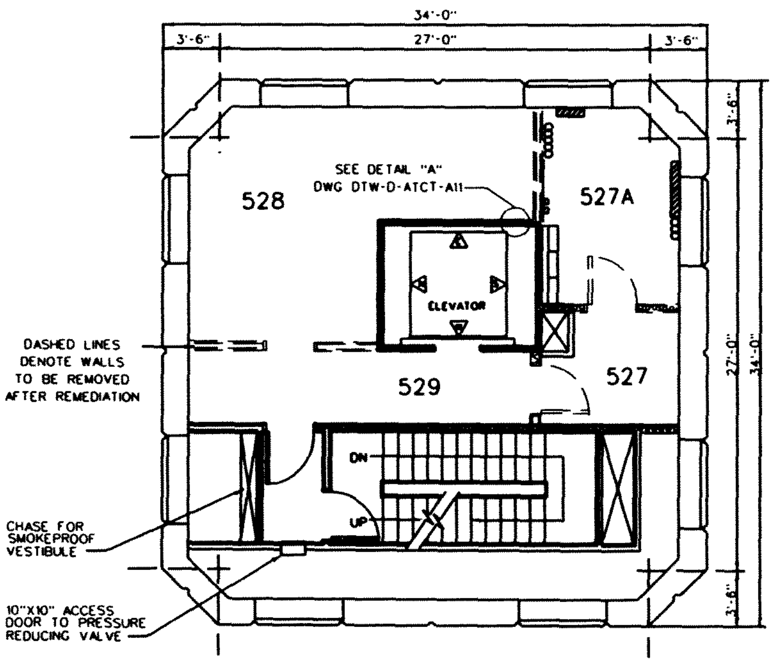
C. ELEVATOR SHAFT LINER REMOVAL AND REPLACEMENT REQUIRES COORDINATION WITH THE ELEVATOR MAINTENANCE CO. AND AIR TRAFFIC TO SCHEDULE LIMITED ELEVATOR SHUTDOWN TIME.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
4TH FLOOR
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

DTW-D-ATCT-4004

...\03C DTW-D-ATCT-4TH FL REM.dgn 8/8/2008 10:26:14 AM



FIFTH FLOOR SHAFT PLAN

SCALE¼" = 1'-0"

SCOPE OF WORK

FLOOR 5:

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MCM BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GARFIE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00 AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL CORRIDOR.

7. PAINT ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT.

8. FURNISH AND INSTALL FIRE-RATED ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE THE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-A11.

ROOM 527

1. A MINICONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING BUT A NEGATIVE PRESSURE ENCLOSURE SYSTEM IS NOT REQUIRED. MIST ANY CONTAMINATED AREAS PRIOR TO REMOVAL. UPON COMPLETION, THE WORK AREA SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH A DETERGENT SOLUTION.

2. CLEANUP AND REMOVAL OF MOISTURE AND MICROBIOLOGICAL CONTAMINATED GYPSUM BOARD, SHAFT LINER, AND INSULATION IN ACCORDANCE WITH THE GUIDELINES ESTABLISHED BY THE NEW YORK CITY DEPARTMENT OF HEALTH ENTITLED GUIDELINES ON ASSESSMENT AND REMEDIATION OF FUNGI IN INDOOR ENVIRONMENTS (GARFIE) (SEE SPECIFICATION ATTACHMENT 1).

3. APPROXIMATELY 4 LINEAR FEET OF 11" AND 25 LINEAR FEET OF 18" WATER STAINED AND/OR CONTAMINATED CHILLED AND HEATING WATER PIPE INSULATION SHALL BE REMOVED AND REPLACED.

4. REMOVE GYPSUM BOARD AND INSULATION TOTALING APPROXIMATELY 15 SQUARE FEET, ON THE NORTH WALL, BETWEEN THE EAST WALL AND THE DOOR TO ROOM 527A, 2' WIDE TO A HEIGHT OF 4' (SURFACE LAYER) AND 2' WIDE TO A HEIGHT OF 3'6" (CONCEALED LAYER).

ROOM 527A

1. A MINICONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING BUT A NEGATIVE PRESSURE ENCLOSURE SYSTEM IS NOT REQUIRED. MIST ANY CONTAMINATED AREAS PRIOR TO REMOVAL. UPON COMPLETION, THE WORK AREA SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH A DETERGENT SOLUTION.

2. CLEANUP AND REMOVAL OF MOISTURE AND MICROBIOLOGICAL CONTAMINATED GYPSUM BOARD, SHAFT LINER, AND INSULATION IN ACCORDANCE WITH THE GUIDELINES ESTABLISHED BY THE NEW YORK CITY DEPARTMENT OF HEALTH ENTITLED GUIDELINES ON ASSESSMENT AND REMEDIATION OF FUNGI IN INDOOR ENVIRONMENTS (GARFIE) (SEE SPEC. ATTACHMENT 1).

3. REMOVE GYPSUM BOARD AND INSULATION TOTALING APPROXIMATELY 5 SQUARE FEET, BETWEEN THE EAST WALL AND THE DOOR TO ROOM 527, 2' WIDE TO A HEIGHT OF 18" (SURFACE LAYER) AND 2' WIDE TO A HEIGHT OF 12" (CONCEALED LAYER).

ROOM 529

1. A MINICONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING. A NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION1.09 REMEDIATION AREA.

2. THE PORTION OF THE EAST WALL, BETWEEN THE SOUTH WALL AND STAIRWELL DOORFRAME, 2" WIDE TO A HEIGHT OF 8', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

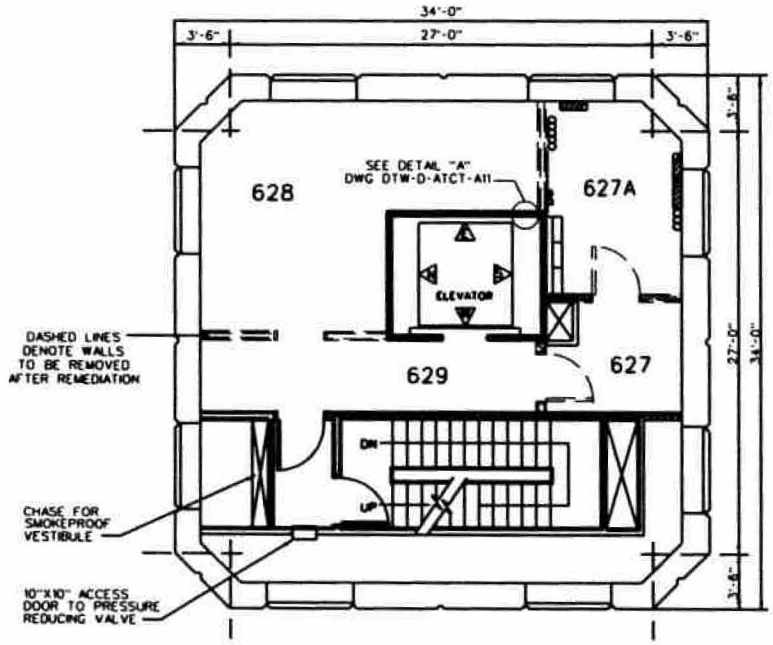
4		
3		
2		
1		5TH FL MOISTURE DAMAGE

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
5TH FLOOR
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

DTW-D-ATCT-A05

...\03D DTW-D-ATCT-5TH FL REM.dgn 8/8/2008 10:03:26 AM



SIXTH FLOOR SHAFT PLAN

NOT TO SCALE

SCOPE OF WORK

FLOOR 6

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MCM BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/ TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GARFIE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00 AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARTITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL CORRIDOR.

7. PAINT ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT.

8. FURNISH AND INSTALL FIRE-RATED ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE THE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-A11.

ROOM 627

1. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CLEANING PROCEDURES AND PIPE INSULATION REMOVAL/REPLACEMENT.

2. APPROXIMATELY 20 LINEAR FEET OF 11" AND 25 LINEAR FEET OF 18" WATER STAINED AND/OR CONTAMINATED CHILLED AND HEATING WATER PIPE INSULATION SHALL BE REMOVED AND REPLACED.

ROOM 628

1. A MINI CONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING. A NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA.

2. THE EAST (ELEVATOR SHAFT) WALL, UP TO A HEIGHT OF 4', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

3. THE SOUTH (ELEVATOR SHAFT) WALL, UP TO A HEIGHT OF 4', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

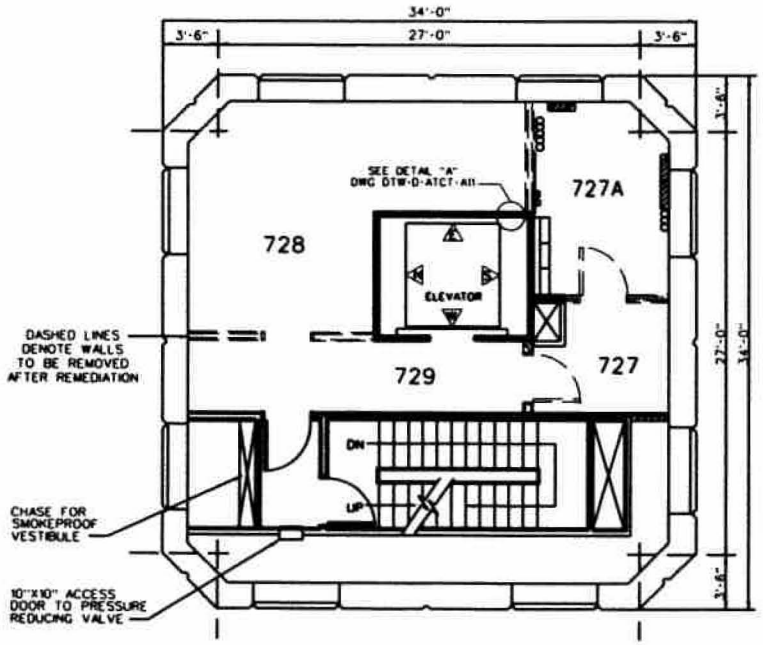
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
6TH FLOOR
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

1 6TH FL MOISTURE DAMAGE

DTW-D-ATCT-406

...\03E DTW-D-ATCT-6TH FL REM.dgn 8/8/2008 10:01:12 AM



SEVENTH FLOOR SHAFT PLAN

NOT TO SCALE

SCOPE OF WORK

FLOOR 7:

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MCM BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/ TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GARFIE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00 AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARTITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL CORRIDOR.

7. PAINT ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT.

8. FURNISH AND INSTALL FIRE-RATED ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE THE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-A11.

ROOM 727

1. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CLEANING PROCEDURES AND PIPE INSULATION REMOVAL/ REPLACEMENT.

2. APPROXIMATELY 3 LINEAR FEET OF 18" WATER STAINED AND/OR CONTAMINATED CHILLED AND HEATING WATER PIPE INSULATION SHALL BE REMOVED AND REPLACED.

ROOM 727A

1. A MINI CONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING. A NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA.

2. THE PORTION OF THE WEST WALL ETWEEN THE CABLE TRAY AND THE NORTH WALL, UP TO A HEIGHT OF 4', HALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

3. THE SOUTH WALL ABOVE THE DOOR TO ROOM 727, 3' WIDE TO A HEIGHT OF 3', HALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

ROOM 728

1. A MINI CONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING. A NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA.

2. THE EAST (ELEVATOR SHAFT) WALL, UP TO A HEIGHT OF 4', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

3. THE SOUTH (ELEVATOR SHAFT) WALL, UP TO A HEIGHT OF 4', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

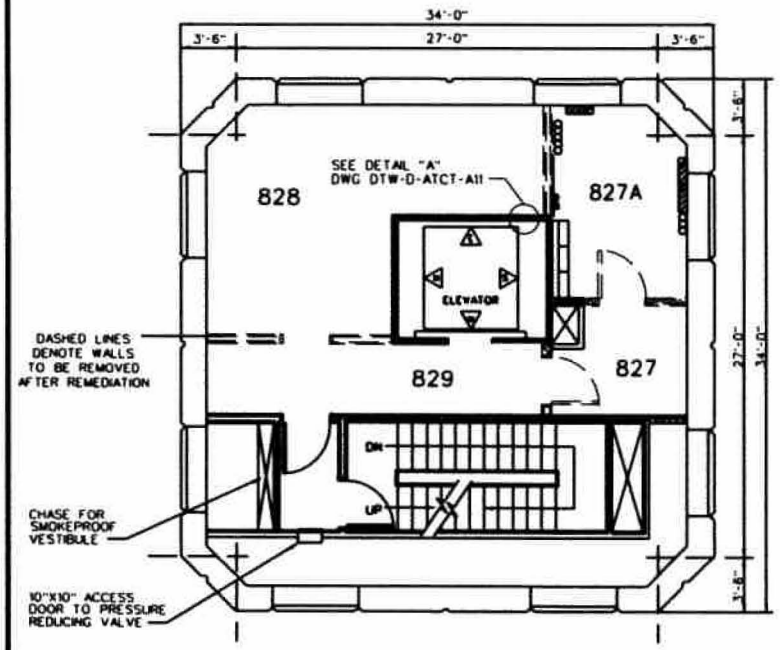
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
7TH FLOOR
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

DTW-D-ATCT-A07

...\03F DTW-D-ATCT-7TH FL REM.dgn 8/8/2008 10:01:55 AM

SCOPE OF WORK



EIGHTH FLOOR SHAFT PLAN

NOT TO SCALE

FLOOR 8:

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MCM BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GARFIE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00 AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARTITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL CORRIDOR.

7. PAINT ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT.

8. FURNISH AND INSTALL FIRE-RATED ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE THE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-A11

ROOM 827

1. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CLEANING PROCEDURES AND PIPE INSULATION REMOVAL/REPLACEMENT.

2. APPROXIMATELY 4 LINEAR FEET OF 1" WATER STAINED AND/OR CONTAMINATED CHILLED AND HEATING WATER PIPE INSULATION SHALL BE REMOVED AND REPLACED.

ROOM 829

1. A MINI CONTAINMENT SHALL BE ESTABLISHED CONSISTING OF A SINGLE LAYER OF 6-MIL POLYETHYLENE SHEETING. A NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA.

2. THE PORTION OF THE EAST WALL, BETWEEN THE SOUTH WALL AND STAIRWELL DOORFRAME, 2" WIDE TO A HEIGHT OF 8', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

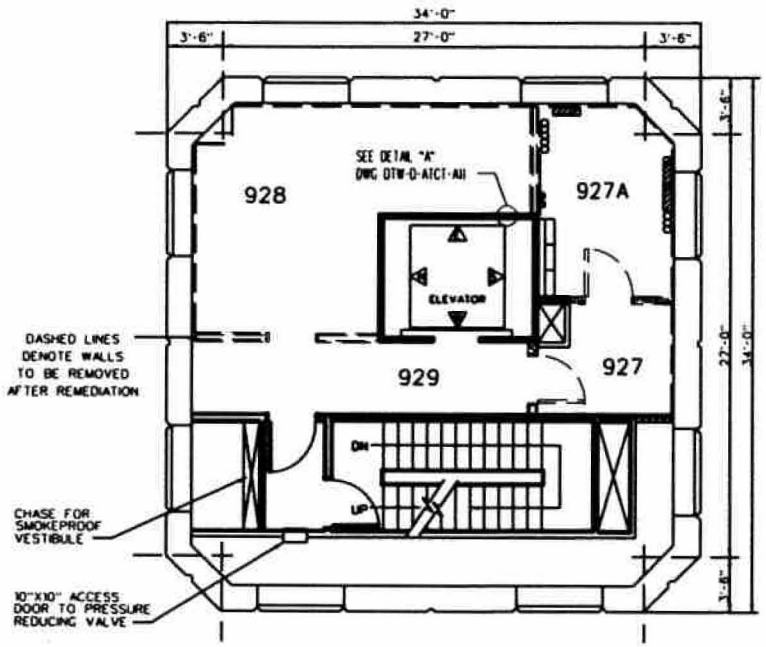
3. THE ADJACENT SOUTH WALL, FROM THE SOUTHEAST CORNER WESTWARD, 1' WIDE TO A HEIGHT OF 8', SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
8TH FLOOR
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

DTW-D-ATCT-A08

...\03G DTW-D-ATCT-8TH FL REM.dgn 8/8/2008 9:51:38 AM



NINTH FLOOR SHAFT PLAN

NOT TO SCALE

SCOPE OF WORK

FLOOR 9:

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MDN BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GAFFE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00 AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARTITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND THE CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL CORRIDOR.

7. PAINT ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT.

8. FURNISH AND INSTALL FIRE-RATED ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE THE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-AII.

ROOM 927

1. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CLEANING PROCEDURES AND PIPE INSULATION REMOVAL/REPLACEMENT.

2. APPROXIMATELY 4 LINEAR FEET OF 11" WATER STAINED AND/OR CONTAMINATED CHILLED AND HEATING WATER PIPE INSULATION SHALL BE REMOVED AND REPLACED.

ROOM 928

1. A CONTAINMENT AND NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA. A DECONTAMINATION UNIT SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.10 DECONTAMINATION.

2. CLEANUP AND REMOVAL OF MOISTURE AND MICROBIOLOGICAL CONTAMINATED GYPSUM BOARD, SHAFT LINER, AND INSULATION IN THE DTW ATCT ROOMS 928, IN ACCORDANCE WITH THE GUIDELINES ESTABLISHED BY THE NEW YORK CITY DEPARTMENT OF HEALTH ENTITLED GUIDELINES ON ASSESSMENT AND REMEDIATION OF FUNGI IN INDOOR ENVIRONMENTS (GAFFE) (SEE ATTACHMENT 1).

3. REMOVE AND REPLACE GYPSUM BOARD, SHAFT LINER, AND INSULATION TOTALING APPROXIMATELY 311 SQUARE FEET

A. THE EAST (ELEVATOR SHAFT) WALL, 8' WIDE TO A HEIGHT OF 5' (SURFACE LAYER), 8' WIDE TO A HEIGHT OF 4'6" (CONCEALED LAYER), AND 8' WIDE TO A HEIGHT OF 4' (SHAFT LINER).

B. THE SOUTH (ELEVATOR SHAFT) WALL, 10' WIDE TO A HEIGHT OF 5' (SURFACE LAYER), 10' WIDE TO A HEIGHT OF 4'6" (CONCEALED LAYER), AND 10' WIDE TO A HEIGHT OF 4' (SHAFT LINER).

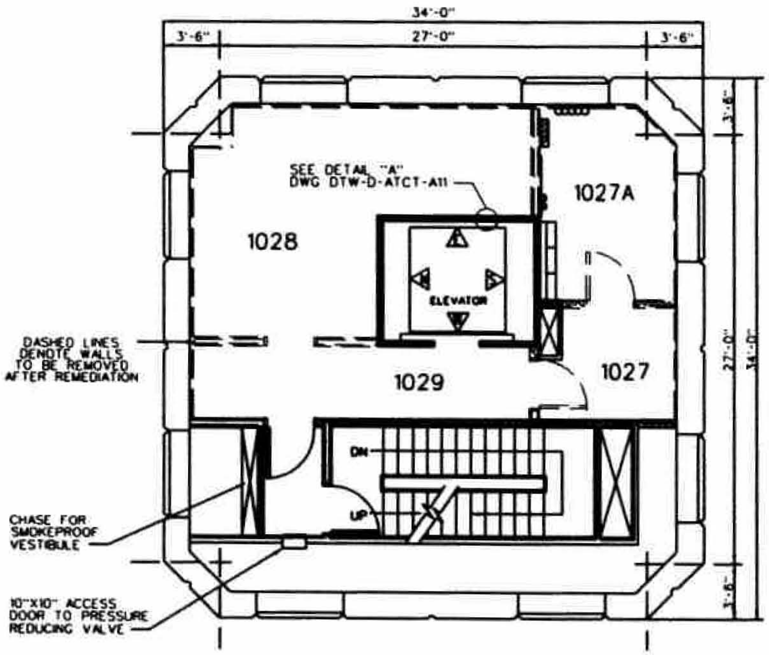
C. THE NORTHWEST COLUMN BEAM ENCLOSURE, ON THE NORTH WALL, 6' WIDE TO A HEIGHT OF 3' (SURFACE LAYER), 6' WIDE TO A HEIGHT OF 2'6" (CONCEALED LAYER), AND 6' WIDE TO A HEIGHT OF 2' (SHAFT LINER).

D. THE WEST WALL, 3' WIDE TO A HEIGHT OF 3' (SURFACE LAYER), 3' WIDE TO A HEIGHT OF 2'6" (CONCEALED LAYER), AND 3' WIDE TO A HEIGHT OF 2' (SHAFT LINER).

E. ELEVATOR SHAFT LINER REMOVAL AND REPLACEMENT REQUIRES COORDINATION WITH THE ELEVATOR MAINTENANCE CO. AND AIR TRAFFIC TO SCHEDULE LIMITED ELEVATOR SHUTDOWN TIME.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
9th FLOOR
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN



TENTH FLOOR SHAFT PLAN

NOT TO SCALE

SCOPE OF WORK

FLOOR 10:

1. PRIOR TO PERFORMING MICROBIOLOGICAL REMEDIATION PROCEDURES, THE CONTRACTOR SHALL SEAL ALL CRITICAL PENETRATIONS AND OPENINGS TO THE WORK AREA WITH A MINIMUM OF TWO LAYERS OF 6-MIL POLYETHYLENE, AND SHALL BE RESPONSIBLE FOR ENSURING ADJOINING AREAS ARE NOT EXPOSED TO THE MICROBIOLOGICAL CONTAMINATION DURING THE REMEDIATION.

2. REMOVE ANY MCM BETWEEN THE BOTTOM METAL RUNNER/TRACK AND THE CONCRETE FLOOR; BETWEEN THE TOP METAL RUNNER/TRACK AND THE STRUCTURAL DECK; AND BETWEEN THE METAL STUD AND EXTERIOR CONCRETE WALL.

3. THE CONTRACTOR SHALL MINIMIZE DUST GENERATION AND USE THE METHODOLOGIES OUTLINED IN GARFIE FOR DUST PREVENTION AND SUPPRESSION.

4. ALL REMOVALS AND OTHER CLEANING PROCEDURES SHALL BE CONDUCTED AT NIGHT BETWEEN THE HOURS OF 11:00 PM AND 6:00 AM. NEGATIVE AIR PRESSURE EQUIPMENT SHALL BE EQUIPPED WITH A HEPA FILTER AND DISCHARGED OUTSIDE OF THE BUILDING WHENEVER POSSIBLE, OTHERWISE DISCHARGED THROUGH A SECOND HEPA FILTER IN ORDER TO PERMIT RECIRCULATION OF AIR INSIDE THE BUILDING.

5. ONCE THE MOLD HAS BEEN REMOVED AND CLEARANCE HAS BEEN ACHIEVED, AND THE STAINED SURFACES HAVE BEEN CLEANED, THEN REMOVE ALL PARTITION WALLS, DOORS AND DOOR FRAMES, EXCEPT THOSE AROUND THE ELEVATOR CORE AND STAIRWELL.

6. CUT A 1/2" GAP BETWEEN THE BOTTOM OF THE GYPSUM BOARD AND THE CONCRETE DECK. FILL THE GAP WITH A 2-HR FIRE-RATED CAULK IN THE REMAINING PARTITION WALLS AROUND THE ELEVATOR CORE AND STAIRWELL.

7. PAINT THE ELEVATOR CORE EXTERIOR AND STAIRWELL CORRIDOR WITH MOLD RESISTANT PAINT.

8. FURNISH AND INSTALL FIRE-RATED ACCESS PANELS IN THE CENTER OF THE NORTH AND EAST ELEVATOR CORE WALL. THE BOTTOM OF THE PANEL SHALL BE 24" ABOVE THE FLOOR. DO NOT PENETRATE SHAFT LINER. SEE DETAIL "B" ON DWG DTW-D-ATCT-A11.

ROOM 1028

1. A CONTAINMENT AND NEGATIVE PRESSURE ENCLOSURE SYSTEM SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.9 REMEDIATION AREA. A DECONTAMINATION UNIT SHALL BE ESTABLISHED AS DESCRIBED IN SECTION 18.10 DECONTAMINATION AREA.

2. CLEANUP AND REMOVAL OF MOISTURE AND MICROBIOLOGICAL CONTAMINATED GYPSUM BOARD, SHAFT LINER, AND INSULATION IN THE DTW ATCT ROOM 1028, IN ACCORDANCE WITH THE GUIDELINES ESTABLISHED BY THE NEW YORK CITY DEPARTMENT OF HEALTH ENTITLED GUIDELINES ON ASSESSMENT AND REMEDIATION OF FUNGI IN INDOOR ENVIRONMENTS (GARFIE) ATTACHED AND INCORPORATED HEREIN BY REFERENCE (SEE ATTACHMENT 1).

3. THE NORTH WALL SHAFT LINER IN ITS ENTIRETY SHALL BE HEPA VACUUMED AND THEN WET WIPED WITH AN APPROVED CLEANING SOLUTION.

4. REMOVE AND DISPOSE OF EXISITING CARPET.

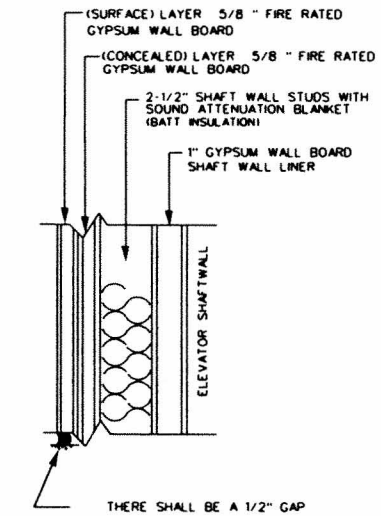
5. REMOVE AND REPLACE GYPSUM BOARD, SHAFT LINER, AND INSULATION TOTALING 792 SQUARE FEET. THE NORTH (ELEVATOR SHAFT) WALL, 22' WIDE FOR THE FULL HEIGHT, (SURFACE LAYER, CONCEALED LAYER AND SHAFT LINER).

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

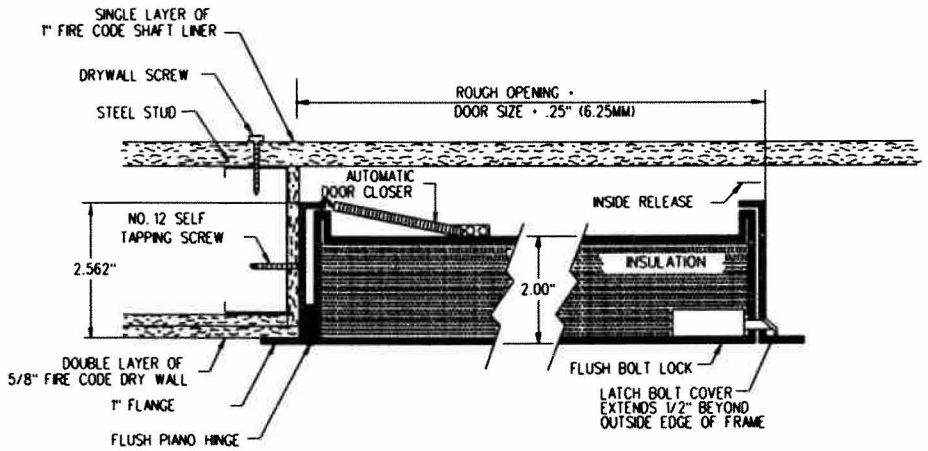
MOISTURE DAMAGE REMEDIATION
10TH FLOOR
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

4		
3		
2		
1		10TH FL MOISTURE DAMAGE

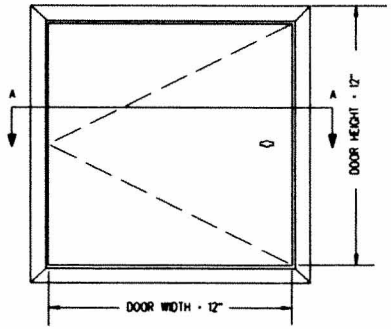
DTW-D-ATCT-A10



DETAIL A - PARTITION WALL
(2 HOUR FIRE RATING)
NOT TO SCALE



A / A CUT THROUGH SECTION
NOT TO SCALE



FRONT ELEVATION
NOT TO SCALE

DETAIL B - INSULATED FIRE RATED ACCESS PANEL FOR WALLS
(1 1/2 HOUR FIRE RATING)
NOT TO SCALE

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MOISTURE DAMAGE REMEDIATION
DETAILS
ATCT
DETROIT METRO WAYNE COUNTY AIRPORT
DETROIT, MICHIGAN

...\03J DTW-D-ATCT-DETAILS.dgn 8/7/2008 1:22:01 PM

ENGINEERING COST ESTIMATE

DATE PREPARED: 8/7/2008

SHEET 1 OF 1

PROJECT	Remediation	BASIS FOR ESTIMATE	☐ STANDARD DESIGN
LOCATION	DTW ATCT	DRAWING REF. NO.	☐ PROJECT DESIGN ☒ X GOVERNMENT ESTIMATE
PREPARING ORGANIZATION UNIT	AGL-473B	SPEC. REF. NO.	☐ OTHER (SPECIFY)
CLASS OF WORK	Environmental/Structural	ESTIMATOR	D. Morse
CHECKED BY			

ITEM	QUANTITY		MATERIAL COST-$		LABOR COST-$		EQUIPMENT COST-$			TOTAL ITEM COST-$
	UNIT MEAS.	NO. UNITS	PER UNIT	TOTAL	PER UNIT	TOTAL	PER UNIT	TOTAL		
Remediation										
Demolition	SF	4869.00	$0.10	$486.90	$0.25	$1,217.25		$0.00		$1,704.15
Drywall Installation 5/8"	SF	275.00	$1.08	$297.00	$2.59	$712.25		$0.00		$1,009.25
Drywall Installation 1"	SF	200.00	$1.38	$276.00	$3.16	$632.00		$0.00		$908.00
Batt Insulation	SF	125.00	$0.45	$56.25	$0.35	$43.75		$0.00		$100.00
Pipe insulation removal	LF	100.00	$0.93	$93.00	$13.05	$1,305.00		$0.00		$1,398.00
Pipe Insulation replacement 11"	LF	40.00	$0.93	$37.20	$0.70	$28.00		$0.00		$65.20
Pipe Insulation replacement 18"	LF	60.00	$0.93	$55.80	$0.70	$42.00		$0.00		$97.80
Surface wipe and HEPA vac	SF	500.00	$0.10	$50.00	$0.42	$210.00	$0.10	$50.00		$310.00
Mini Containment	SF	1300.00	$4.00	$5,200.00	$3.00	$3,900.00		$0.00		$9,100.00
Full Containment	SF	2200.00	$7.00	$15,400.00	$10.00	$22,000.00				$37,400.00
Paint	SF	3568.00	$0.00	$0.00	$0.00	$0.00				$0.00
Fire-Rated Caulk	LF	775.00	$0.50	$387.50	$1.25	$968.75				$1,356.25
Insulated Fire Rated Access Panels	EA	14.00	$150.00	$2,100.00	$30.00	$420.00				$2,520.00
Replace outlet face plates	EA	20.00	$0.75	$15.00	$0.30	$6.00		$0.00		$21.00
Clear debris bags	ROLL	2.00	$40.00	$80.00		$0.00		$0.00		$80.00
Mobilization	EA	1.00		$0.00	$1,500.00	$1,500.00		$0.00		$1,500.00
Dumpster	EA	2.00	$1,000.00	$2,000.00	$500.00	$1,000.00		$0.00		$3,000.00
Elevator Technician	HR	16.00		$0.00	$25.00	$400.00		$0.00		$400.00
Supervisor	HR	40.00		$0.00	$87.60	$3,504.00		$0.00		$3,504.00
Crew	HR	40.00		$0.00	$82.80	$3,312.00		$0.00		$3,312.00
Duct Tape	ROLL	10.00	$10.00	$100.00		$0.00		$0.00		$100.00
Negative air machine w/ filter	DAY	5.00		$0.00		$0.00	$100.00	$500.00		$500.00
Dehumidifier	DAY	5.00		$0.00		$0.00	$35.00	$175.00		$175.00
HEPA vac	DAY	5.00		$0.00			$30.00	$150.00		$150.00
									SUBTOTAL = $	68,710.65
									Night Differential 25%	17,177.66
									OH&P 25%	21,472.08
									TOTAL = $	107,360.39

FAA Form 4450-8 (6-67)

FAA AC 77-5269

APPENDIX 1. FORM 3900-8, FAA PRE-CONSTRUCTION AND MAINTENANCE PROJECT SAFETY AND HEALTH CHECKLIST

Purpose

This checklist is intended to be used as a tool by RE/COTRs, designated facility POCs, or SSC managers who oversee construction and maintenance activities that potentially have Occupational Safety, Health, and Environmental (OSH/E) related impacts on AT/AF operations. This tool shall be used, as appropriate, during critical phases of construction and maintenance activities (e.g. the pre-construction meeting, 30-60 days prior to commencement of work, weekly/daily construction meetings, etc.). Emphasis should be placed on using this checklist as a tool to assess as well as reassess hazards as the project progresses. Specifically, this checklist is intended to:

- Promote sensitivity to potential OSH/E hazards associated with projects and stress the importance of not disrupting NAS operations
- Assist in identifying and validating potential project hazards and associated risks
- Assist in preventing safety and health incidents/accidents and facility shutdowns
- Ensure appropriate contractor measures and controls are in place to address potential project hazards
- Facilitate discussion with the contractor regarding plans to prevent/minimize potential incidents/accidents
- Enhance coordination between OSH/E professionals, project personnel and contractors
- Facilitate review of critical FAA OSH/E procedures with contractors
- Raise OSH/E awareness

- This checklist relies on the training and professional judgment of the user. OSH/E personnel should be consulted as needed.

- A facility POC with a thorough understanding of facility procedures and equipment considerations should participate in the site walk-through.

NOTE: For small procurements (e.g. credit card purchases) and internal FAA projects (e.g. field maintenance party projects), without specifications, immediately contact the designated OSH/E professional for assistance in completing this checklist.

1 Project Summary Information

Fill in the requested site specific information.

Project Name and Description:	**Microbiological Remediation DTW ATCT, Detroit, Michigan**		
Project/Activity/Task:	Moisture Damage Remediation		
Planned Start:	**TBD**		
Expected Completion Date:	**Within 30 Calendar Days**		
Contractor Contact:	Name:	Phone:	
OSH/E Contact:	Name: Musa Abuzir	Phone:	734-487-7323
Facility POC:	Name:	Phone:	

2 Facility Procedures

Review site specific FAA procedures and considerations with the contractor. For example, discuss when or how during the project, emergency plans will be used/required. After the procedures have been reviewed, perform a site walk-through with the contractor.

Facility Procedures	Reviewed?			Notes
	Yes	N/A	No *	
Asbestos Contingency Plan		x		
Critical Power Systems Awareness		x		
Lock Out/Tag Out		x		
Work Permits (e.g. Asbestos, Lead)		x		
Emergency Plans (e.g. Occupant Emergency Plan)	x			
Impacts to Fire Alarm and Suppression Systems	x			
Site Walk-Through (With Facility POC & Contractor(s))	x			
Hazard Communications (e.g. MSDSs)	x			
Other (e.g. Access/Security/Communications Equip.)	x			

3 Project Hazard/Risk Analysis

Think about your project and its potential hazards and risks. Consider sensitive NAS operations and all facility personnel that may be impacted by your projects. As an example: Construction activities with potential for impacting asbestos materials in or near sensitive operations could result in incidents which disrupt NAS operations. For each potential project hazard indicate (with a checkmark) a level of potential risk for exposure/release/incident.

Potential Project Hazards	Level of Potential Risk For Exposure/Release/Incident*			Notes
	High	Low	N/A	
Consider Sensitive AT/AF Operations:				
Hazardous Substances and Environmental Controls				
Asbestos (e.g. Tiles & Insulation)			X	
Chemical, Gas, Fumes, Dust, Radiation		X		
Indoor Air		X		
Ventilation System			X	
Lead-based Paint			X	
Electrical Power Systems			X	
Pressurized Equipment and Systems		X		
Work at Heights (>6 feet)		X		
Other (e.g. Confined Space)		X		

*Consult with your SECM or designated OSH/E professional for additional guidance and assistance.

4 Site Safety and Health

After reviewing the potential hazards and risks in block 3, ensure that the contractor has identified measures and controls to address applicable site safety and health risks (e.g. through discussions, available site safety plans, or other applicable documents). In your judgment, if the contractor has appropriate measures to address the potential project hazards (see block 3), check the appropriate YES boxes below. If a potential project hazard has been identified in block 3 and no associated measures or controls are evident, then check the appropriate NO boxes below. If a NO box is checked, use the close-out date box to indicate when appropriate measures or controls have been incorporated into the contractor's site safety and health approach.

Program Elements	Yes	N/A	No *	If No, Indicate Close-out Date	Notes
Hazardous Substances & Environmental Controls					
Asbestos		X			
Chemicals (e.g. Introduced to site)(Provide MSDS)	X				
Gas		X			
Fumes		X			
Lead Paint/Other Coatings		X			
Radiation and Electric Fields		X			
Ventilation and Exhaust Systems		X			
Electrical Power Systems					
Procedures for Critical Power Systems Coordination		X			
Provisions for GFCI		X			
Control of Hazardous Energy (Lockout/Tagout) (e.g. Electrical, Mechanical, Hydraulic, Thermal, Radiation)	X				Elevator
Pressurized Equipment and Systems					
Work at Heights (>6 feet)					
Safe Access and Fall Protection	X				
Work Platforms	X				
Floor and Wall Holes and Openings	x				
Personal Protective and Safety Equipment	X				
Fire Prevention	X				
Accident Prevention	X				
Excavations (New Construction or Tie in)		X			
Welding and Cutting		X			
Demolition of Existing Facility in Whole or Part	X				
Medical and First Aid Requirements	X				
Hand and Power Tools	X				
Material Handling, Storage, and Disposal	X				
Rigging		X			
Machinery and Mechanized Equipment (e.g. Equipment & Operator Certifications)	X				
Sanitation		X			
Lighting		X			
Concrete & Masonry Construction & Steel Erection		X			
Hazardous, Toxic, Radioactive Waste Activities		X			
Other (e.g. Noise)	X				

5 Review Information

The appropriate FAA point of contact and the contractor shall sign below to document discussion of the items on this form.

Reviewed By:	**Date**
FAA POC: _____	
Contractor: _____	
Incident Prevention and Hazard Control Methods Discussed? Yes ☐ No ☐	

This block indicates routing of this checklist for project coordination.

This form has been forwarded to:	**Name**	**Date**
SECM, OSH/E Contact:		
AF Facility Manager:		
AT Facility Manager:		
Other:		

Notes (e.g. Provide further explanation of potential hazards, locations, etc. below and attach additional sheets if necessary.)

* Consult with your SECM or designated OSH/E professional for additional guidance and assistance.

PROJECT	DTW ATCT Microbiological Remediation	JON		DATE	07/18/08
DISTRICT	ZOB	FACILITY	ATCT	FACILITY ID	DTW
ENGINEER	D. MORSE	EHS	M. ABUZIR	SUPERVISOR	T. DEMSKE
SIGNATURE		SIGNATURE		SIGNATURE	

Issue		Yes	N/A	No	Action Items and Notes *If YES, always coordinate with EOSH Specialist*
AIR EMISSIONS **CLEAN AIR ACT (CAA)**	Replace and/or install new emission sources such as boilers, incinerators, storage tanks, engine generators, painting booths, space heaters, equipment using CFCs or Halon, etc. **Notes:**		X		1. Review CAA implementing regulations, 40 CFR Parts 50-53, 60, 61, 63, 68, 70, 71, 79, 80, 82, 86, 87, FAA Orders 1050.17, and 1050.18, EO 12843: Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances, EO 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, FAR implementing regulations, 48 CFR Part 23, Clean Air Act Amendments 1990. *If yes:* 2. Prepare and submit CAA Construction and Operating Permit if required. 3. Unless specified in a permit exemption rule promulgated by the cognizant state air pollution control agency or local district, installation or modification of the facilities may require permits. Permit triggers vary widely from state to state and may encompass one or more of the following: maximum rated capacity hours of operation, location of source in non-attainment areas, and maximum potential to emit. 4. Investigate federal, state and local permit requirements for facility.
ASBESTOS	Will activity potentially impact presumed or known asbestos containing materials (ACM)? Identify if an Asbestos Survey was done, when, and where asbestos materials are located in the work area. Include Asbestos Work Permit requirements. **Notes:**		X		1. Check Index of Asbestos and Lead Paint Surveys to see if the facility has been surveyed for asbestos. Index available from the FOPOC and ANS-500. 2. If no survey available, then all impacted suspect materials must be assumed ACM or sampled & tested. Although facilities constructed after 1988 most likely do not contain asbestos it is important to remember ACM materials are still being installed into new buildings. Cursory samples may be required – see EOSH Coordinator. 3. Review FAA Order 1050.20, SMO Asbestos Control Program (ACP), bargaining union agreements, CAA implementing regulations, 40 CFR Part 61, Subpart M Toxic Substances Control Act (TSCA) implementing regulations, 40 CFR Part 763, 29 CFR 1926.1101, 29 CFR 1910.1001, state, and local regulations. *If yes:* 4. Include in specifications applicable regulatory and union agreement requirements along with safe work practices. See ANS-500 for approved specifications and work plan procedures
CHEMICALS **FEDERAL INSECTICIDE FUNGICIDE AND RODENTICIDE ACT (FIFRA)**	Does the project require the application of pesticides and/or herbicides? **Notes:**		X		1. Review FAA Order 1050.17, FIFRA implementing regulations, 40 CFR Parts 152, 162, and 171 and State regulations. *If yes:* 2. Specify the use of State-certified applicators, where applicable. 3. Specify copy of application records be provided to FOPOC/Environmental Protection Specialist.
CHLOROFLUORO-CARBONS (CFC)	Is CFC containing equipment being replaced, installed or disposed? (I.e. refrigeration systems, Halon systems, HVAC systems, etc.) **Notes:**		X		*If yes:* 1. Review FAA Order 1050.17 & 18 and 40 CFR 82. 2. Replace with non-CFC equipment. 3. Recover & recycle existing CFCs.

Issue		Yes	N/A	No	Action Item and Notes
COMPRESSED GAS	Are compressed gasses utilized? Notes:		X		*If yes:* 1. Review 29 CFR 1910 Subpart M, 29 CFR 1910.101 and 29 CFR 1910.169.
ENERGY	Install new lighting, HVAC, or environmental controls? Notes:		X		1. Review Energy Policy Act of 1992 and Executive Order 12902 & 12759, 12844: Federal Use of Alternative Fueled Vehicle, 12845: Requiring Agencies to Purchase Energy Efficient Computer Equipment that require energy reduction in all Federal buildings by 2005. Review FAA Order 1053.1A. *If yes:* 2. *Lighting:* Use energy efficient system with electronic ballast. 3. *HVAC:* Use energy efficient equipment. 4. *Controls:* Contact FOPOC, Energy Manager. 5. *Building/Structure:* Contact FOPOC, Energy Manager.
ENVIRONMENTAL DUE DILIGENCE AUDIT (EDDA) **REFER TO SOP 30**	Acquire, lease and/or dispose of land property? Notes:		X		*If yes:* 1. Review FAA Order 1050.17 & 19, Community Environmental Response Facilitation Act (CERFA). 2. Coordinate with EOHS Specialist and FAA Real Estate. 3. If on airport property, obtain Hold Harmless Agreement. 4. Conduct EDDA if off airport property or Hold Harmless Agreement is not obtained.
FLUORESCENT LAMPS	Dispose, install or recycle fluorescent lamps? Notes:		X		*If yes:* 1. Comply with applicable regulatory requirements. Initiate recycling efforts if feasible.
FUEL STORAGE TANKS	Install, remove and/or replace an underground or aboveground storage tank or piping? If the project is new construction, is an existing UST and/or piping near the project site being impacted? Notes:		X		1. Check Storage Tank Inventory available from the Regional FST Manager or the FOPOC or ANI Representative. 2. Review RCRA implementing regulations, 40 CFR Parts 261, 262, 265, 266, 268, 273, 279, 280-282, CERCLA implementing regulations, 40 CFR Parts 302, 370, CWA implementing regulations, 40 CFR Parts 112-117DOT implementing regulations, 49 CFR Parts 171-179 SARA implementing regulations, CFR Parts 355, 370 Executive Order 12856 Delete (Land Disposal Program Flexibility Act, 1966, LDPFA (PL 104-119). 3. Non Hazardous Solid Waste implementing regulations. 40 CFR Parts 240-244 (recycling), 257-258. *If yes:* 4. Review FAA Order 1050.15A, 16, 17, 40 CFR 280, and State Regulations. 5. Use State-specific plans & specifications for removal and installation available from the Regional FST Manager, FOPOC or ANI Representative. 6. Where state and localities require use licensed UST/AST removers and installers. 7. Prepare Spill Prevention Control and Countermeasure Plans (SPCC) for new tank installations per 40 CFR 112.
HAZARDOUS AND SOLID WASTE MANAGEMENT	What types of waste will be generated as a result of the project? Notes: **Microbiologically contaminated dry wall**	X			1. Determine if the waste generated is classified as a hazardous waste by determining if it is a listed hazardous waste or if it is characteristically hazardous. 2. Review FAA Order 1050.17 (Chapter 12), 40 CFR 260-266, 273, 279, and state hazardous waste regulations. *If yes:* 3. Estimate the amount of hazardous waste that will be generated to determine the type of generator (e.g., large quantity, small quantity, or conditionally exempt). 4. Obtain an EPA ID # or determine if the facility's ID # can be used for the project without changing their generator status. 5. Ensure that hazardous waste is stored in accordance with the appropriate generator requirements. 6. Ensure manifesting and recordkeeping/reporting requirements are followed. 7. Ensure that a permitted transporter transports the waste and that the waste is shipped to a permitted TSDF.

Issue		Yes	N/A	No	Action Item and Notes
LEAD BASED PAINT & LEAD-ACID BATTERIES	Disturb, store, dispose or recycle of lead paint or lead acid batteries? Notes:		X		1. Review 29 CFR 1926.62, RCRA implementing regulations, 40 CFR Part 262, TSCA implementing regulations, 40 CFR Part 745, OSHA implementing regulations, 29 CFR 1926.62. 2. Check Index of Lead Paint Surveys to see if sampling has been conducted. 3. If no paint sampling results available, then all impacted materials must be assumed lead containing or contaminated until sampled & tested. *If yes:* 4. Comply with applicable OSHA regulatory requirements for worker protection and EPA requirements for removal & disposal. Initiate recycling efforts for scrap metal or batteries when feasible.
LOCKOUT/TAGOUT & HIGH VOLTAGE	Are electrical systems being impacted? Notes:		X		1. Review 29 CFR 1910.333, 1910.147 *If yes:* 2. Comply with applicable regulatory requirements including 29 CFR 1910.147 and 29 CFR 1926.431. Initiate recycling efforts if feasible. 3. Only utilize fully trained personal to perform electrical work and lockout/tagout procedures.
NATIONAL ENVIRON-MENTAL POLICY ACT (NEPA) **REFER TO SOP 30**	Does the project potentially impact the environment with respect to noise, water quality, air quality, wetlands, flora and fauna, wildlife, historic and archeological sites, endangered species & other protected areas? Notes:		X		1. Review NEPA implementing regulations, 40 CFR Parts 1500-1508, FAA Order 1050.10D, Endangered Species Act implementing regulations, 50 CFR Parts 402, 450-453. *If yes:* 2. Is activity classified as a Categorical Exclusion (CATX)? 3. If not a CATX, prepare Environmental Assessment (EA). 4. Prepare Finding Of No Significant Impact (FONSI) or Environmental Impact Statement (EIS) as appropriate.
PCBs, MERCURY, RADIOACTIVE, RADON, ETC.	Relocate or dispose of PCBs and/or PCB containing equipment? (Fluorescent fixture ballast's, electric transformers and equipment) Dispose of Mercury Switches, Radioactive tubes, or other hazardous waste? Is there evidence or potential for elevated radon levels in construction site? Are CFCs or PCBs being recycled? Are capture systems employed? Notes:		X		1. Check the PCB Inventory available from each FOPOC. 2. Determine if the PCB component was manufactured before 1984. If so, dispose of as PCB material. 3. Determine if radon will or is an influence at the site. *If yes:* 4. Review FAA Order 1050.14A, 1050.17 and 3910.3A, 40 CFR 190-199, 42 CFR 2011-2259, TSCA implementing regulations 40 CFR 761 Subpart D, 40 CFR 260-270, 10 CFR 30, applicable IEEE standards and State regulations. NRC implementing regulations, 10 CFR Parts 16-71, TSCA Title III, Indoor Radon Abatement Act of 1988
SAFETY	Safety issues? I.e. Clear aisle space, electrical equipment clearances, toe boards, hand rails, stair clearances, safety cages, confined spaces, fall protection, fire protection, fire life safety, personal protective equipment, hearing protection, ladders, Hazard Communication (HAZCOM), first aid, accident prevention, construction safety, etc. Notes:	X			1. Review FAA Orders 1050.17 & 3900.19A, and 29 CFR 1910 & 1926. *If yes:* 2. Comply with applicable regulatory requirements. 3. Comply with 5000-pound shock load for anchorage per person. 4. Insure safety boards are furnished with the necessary signs and PPE as required for the particular hazard

Issue		Yes	N/A	No	Action Item and Notes
TRAINING	Are personal required to have training to be qualified to work? Notes:	X			*If yes:* 1. Comply with applicable regulatory requirements. 2. Maintain training records on-site and confirm records are valid for duration of project. 3. Provide training for all facility occupants as required by law.
WATER **CLEAN WATER ACT (CWA) & SAFE DRINKING WATER ACT (SDWA)**	Does the project involve the clearing, grading, and excavation of over 5 acres; (I acre is proposed rule and is not final) impact navigable waters; utilize equipment which can discharge to storm water or wastewater systems (cooling tower discharges or boiler blow downs)? State and local regulatory authorities may impose more stringent SWDP requirements. Notes:		X		1. Review FAA Order 1050.17, Safe Drinking Water Act (SDWA) implementing regulations, 40 CFR Parts 141, 143, SDWA implementing regulations, 40 CFR Parts 144-149, Executive Order 12902, 40 CFR 120-143, and State regulations. 2. Review pollution prevention under EO 12856, EO 12873: Federal Acquisition, Recycling, and Waste Prevention. 3. Clean Water Act implementing regulations, 40 CFR Parts 110, 112, 122, 136, 400-460, and 33 CFR Part 154, FAA Order 1050.15A *If yes:* 4. Coordinate permit with EOHS personnel and agencies (i.e. NPDES, sanitary sewer discharge, etc.) as required. 5. Unless specified in a permit exemption rule promulgated by the cognizant state air pollution control agency or local district, installation or modification of the facilities may require permits. Permit triggers vary widely from state to state and may encompass one or more of the following: maximum rated capacity hours of operation, location of source in non-attainment areas, and maximum potential to emit. 6. Prepare Spill Plan (SPCC) for fuel tanks as required by 40 CFR 112.

GREAT LAKES REGION EHS CONTACTS

		PHONE	FAX
AGL REGION			
471 Supervisor	Maureen Clark	847/294-8557	847/294-8436
471 ROSHM	Wayne Vogelsburg	847/294-8453	847/294-8436
473 Energy	Stanley Lee	847/294-8457	847/294-8436
471 Safety	Bill Jaeger (NISC)	847/294-7613	847/294-8436
471 Safety	Lenore McDonald (NISC)	847/294-7666	847/294-8436
471 F/L Safety	Bill Ibbotson	847/294-8559	847/294-8436
471 Environmental	Jose De Leon	847/294-8409	847/294-8436
ANI Chicago Implementation Center			
430 Safety/Environ.	Homer Benavides	847/294-8078	847/294-7841
430 Environmental	Steve Myers (NISC)	847/294-8419	847/294-8077
PASS Safety Rep.	Glen Fidge	616/837-6706	616/837-8285
AGL Air Traffic Division			
510	Norm Leader	847/294-7559	847/294-8101
NATCA Safety Rep.	Taylor Koonce	317/484-6600	
SUPERIOR SMO			
EPS	Bill Bader	440/774-0816	440/774-0835
Safety Manager	VACANT		
WI Hazmat	Mike Diaz	(847) 608-5827	847-608-5772
MI Hazmat	Musa Abuzir (NISC)	734/487-7323	734/487-7427
Safety	Musa Abuzir (NISC)	734/487-7323	734/487-7427
Energy	Steve North	920/490-8617	920/431-5880

FAA AGL CONSTRUCTION and MAINTENANCE PROJECT
VENTILATION and AIRBORNE CONTAMINANTS CHECKLIST

Purpose

This checklist is intended to be used as a tool by those who design, review and/or oversee construction and maintenance activities that potentially have ventilation related airborne contaminant impacts on AT/AF operations. This tool should be used, as appropriate, during design and review phases of construction and maintenance activities. Emphasis should be placed on using this checklist as a tool to assess as well as reassess hazards as the project progresses. This checklist is intended to:

- Promote sensitivity to potential ventilation related airborne contaminants associated with projects
- Stress the importance of not disrupting NAS operations
- Assist in identifying and validating potential project hazards
- Assist in preventing ventilation related airborne contaminant incidents/accidents and facility shutdowns
- Ensure appropriate contractor measures and controls are in place to address potential project hazards
- Facilitate discussion with the contractor regarding plans to prevent/minimize potential incidents/accidents
- Enhance coordination between Occupational, Safety, Health /Environmental (OSH/E) professionals, project personnel and contractors
- Raise OSH/E awareness to potential airborne contaminant hazards associated with construction and maintenance projects

- This checklist relies on the training and professional judgment of the user. OSH/E personnel should be consulted, as needed.
- A facility point of contact (POC) with an understanding of facility procedures and equipment considerations should participate in site evaluation.

1 Project Summary Information

Fill in the requested site-specific information.

Project Name and Description: DTW ATCT Microbiological Remediation
SMO: DET District **Facility ID:** DTW ATCT
Project Designer: B. Hebert, D. Morse **Transmittal #:**
Env & Safety Review By: **Date:** 07/18/08
Project/Activity/Task:
Planned Start:
Expected Completion Date:
Contractor Contact: Name: Phone:
OSH/E Contact: Name: Phone:
Facility POC: Name: Steve McClinchey Phone: 734-995-8502

2 Facility Procedures

What site-specific procedures and considerations associated with airborne contaminants may apply to this project? For example, will asbestos contingency plans be used/required? If a specific plan is required, is it available? Has the plan been reviewed to ensure accuracy and applicability to the project? If a plan is required and "No" is circled for available and/or reviewed, use the closeout date box to indicate when appropriate measures or controls have been addressed.

Facility Procedures	Required	Available	Reviewed	If No, Indicate Close-out Date
Asbestos Contingency Plan	N	Y N	Y N	
Work Permits (e.g. Asbestos, Lead)	N	Y N	Y N	
Emergency Plans (e.g. Occupant Emergency Plan)	Y	Y N	Y N	
Hazard Communications (e.g. MSDSs)	Y	Y N	Y N	
Other:	Y N	Y N	Y N	

3 Project Airborne Contaminants

Think about the project and its potential hazards. Consider sensitive NAS operations and all facility personnel that may be impacted by the projects. As an example: Construction activities with potential for impacting asbestos materials in or near sensitive operations could result in incidents that disrupt NAS operations. For each potential project hazard, indicate (with a checkmark) a potential for exposure/release/incident.

Potential Airborne Contaminate Project Hazards

	✔		✔		✔
Asbestos (e.g. Tiles & Insulation)		**Airborne dust** (not lead or asbestos)	✔	**Lead paint**	
Installation of carpet/vinyl flooring		**Wall coverings (paneling, wall paper)**	✔	**Paints/varnishes**	
New furniture/cubicles/cabinets		**Use of sealants/caulks**	✔	**Solvents**	
Cleaners/detergents	✔	**Other chemicals**		**Combustion products** (CO, hydrocarbons)	
Pesticides		**Molds/mildew/fungus**	✔	**Animal feces** (rodents, birds)	
Roofing products		**Confined spaces**		**Grinding/sanding**	
Welding/cutting indoors		**Welding/cutting outdoors**		**Construction/demolition**	✔
Other:		**Other:**		**Other:**	

4 Site Ventilation

After reviewing the potential airborne contaminants in block 3, ensure that measures and controls to address applicable site airborne contaminants and ventilation issues are addressed. In your judgment, have appropriate measures been addressed to minimize the potential project airborne contaminants (see block 3)? If yes, check the appropriate boxes below. If a potential project airborne contaminants hazard has been identified in block 3 and no associated measures or controls are evident, then check the appropriate NO boxes below. If a NO box is checked, use the closeout date box to indicate when appropriate measures or controls have been addressed.

Program Elements	Yes	N/A	No *	If No, Indicate Close-out Date	Notes
Chemical Substances (all projects)					
1. MSDS(s) have been reviewed					
2. Substitute products have been evaluated					
3. MSDS(s) are available on-site for all substances					
4. Building occupants have been notified of potential odors/hazards					
5. Substances will cure without a "bake-out" period.					
(a). If no was answered to the above question (5), have building occupants been notified?					
6. Will odors have dissipated prior to shift change					
(a). If no was answered to the above question (6), has following shift been notified?					
7. Substance is without strong odors/vapors that may migrate into or near occupied areas.					(If yes, skip to question 8)
(a). If no was answered to above question (7), can work be done when building is unoccupied?					(If yes, skip to question 8)
(a)(i) If no was answered to above question [(7)(a)], can area be pressurized?					(If yes, section on supplemental ventilation must be completed)
(a)(ii) If no was answered to above question [(a)(i)], the existing AHU is adequate for ventilation as configured?					(If no, section on supplemental ventilation must be completed)
For Outdoor Projects (roofing, vegetation control)					
8. AHU intake vents have been sealed					
9. All other means by which vapors may enter the facility (open windows, window AC units, etc.) have been eliminated.					
For Indoor Projects (painting, remodeling)					
10. Existing AHU is adequate for ventilation					(If no, supplemental ventilation section must be completed)
11. Means of egress from occupied areas will remain clear and unaffected during the project.					
Supplemental Ventilation					
12. Existing AHU is adequate for ventilation needs associated with this project as configured.					(If yes, skip to question 18)
13. System can be reconfigured to meet ventilation requirements					
(a) If yes was answered to question (13), are personnel trained to reconfigure system available					
14. Ventilation requirements can be met without supplemental ventilation units.					
(a). If no, are units available on site?					
15. Does facility have adequate power supply and outlets for supplemental ventilation units					
16. Duct route has been evaluated					
17. Exhaust from units is prevented from being reintroduced to facility					
18. Is adequate return air available for ventilation units?					
Air Monitoring					
19. The project may proceed without air monitoring.					
(a). If no was answered to above question (16), has air monitoring company been contracted					
20. Have arrangements been made for air monitoring in case of accidental substance release.					
Other:					

5 Review Information

Reviewed By: Name	Signature	Date
OSH&E Contact:		
Facility Manager:		
Facility POC:		
Other:		

6 AGL OSH / E CONTACTS

AGL REGION		PHONE	FAX
471 ROSHM	Wayne Vogelsburg	847/294-8453	847/294-8436
471 RPMES	Joe Nakanishi	847/294-8461	847/294-8436
471 Energy	Stanley Lee	847/294-8457	847/294-8436
471 FLS	Bill Ibbotson (NISC)	847/294-8559	847/294-8436
471 Project Mgmt	Alisa Liu (NISC)	847/294-7666	847/294-8436
471 Env & Safety	Christine Warta (NISC)	847/294-8147	847/294-8436
471 Env & Safety	Bill Jaeger	847/294-7613	847/294-8436
ANI Great Lakes IC			
420 Env & Safety	Denise Trausch (NISC)	847-294-8415	847/294-8172
CHICAGO SMO			
SECM & Safety Mgr	Dave Weber	847/608-5814	847/608-5872
CHI Hazmat	Mike Diaz (JALCO)	847/608-5827	847/608-5872
CHI Energy	William Hui	733/601-7717	
ZAU Hazmat	Shawn Adams	847/608-5725	847/608-5872
CROSSROADS SMO			
SECM	Ann Sheehan	317/246-4518	317/246-4590
SECM	Bill Watson	317/246-4517	317/246-4590
IND Hazmat	Jim Euler (JALCO)	317/246-4519	317/246-4590
ZID Hazmat	Kelly Yochum (NISC)	317/247-2618	317/247-2619
Energy	Ashfaq Hussain	317/247-2291	317/247-2246
DAKOTA-MINNESOTA SMO			
SECM	Alex Gintner	651/463-5921	612/463-5692
DMS Hazmat	Ted Frey (NISC)	651/463-5920	612/463-5692
DMS Hazmat	Scott Scheer (NISC)	651/463-5922	612/463-5692
ENERGY	Steve Aldridge	651/463-5649	
SUPERIOR SMO			
SECM	Bill Bader	440/774-0815	440/774-0835
Safety Manager			
WIS Hazmat			
MCH Hazmat	Musa Abuzir (NISC)	734/487-7323	313/487-7427
Energy	Steve North	920/490-8617	920/431-5880
OHIO SMO			
SECM & Safety Mgr	Bill Bader	440/716-7136	440/716-7105
OHIO Hazmat	John Guty (NISC)	440/716-7139	440/716-7105
ZOB Hazmat	Kitty Woldow (NISC)	440/716-7138	440/716-7105
Energy	Dale Harbert	440/716-7181	440/716-7105

* Consult with your SECM or designated OSH/E professional for additional guidance and assistance.

PROCUREMENT REQUEST DATA

Street Address:	FEDERAL AVIATION ADMINISTRATION DTW SSC. DETROIT METRO AIRPORT BUILDING 801, ROOM 117 DETROIT, MI 48242		
City	DETROIT		
State	MI		
Zip code	48242		
Requisitioning Office	Detroit District		
Supplies or Services	DETROIT, MI (DTW) AIR TRAFFIC CONTROL TOWER (ATCT) MICROBIOLOGICAL REMEDIATION		
Term	THE PROJECT DURATION IS 30-DAYS OF WORK		
Estimated Cost	$107,400.00		
Vendor	MIS ENVIRONMENTAL 304 S. NIAGRA ST SAGINAW, MI 48602 (517) 793-3990 X 212	UDECON 678 FRONT ST., SUITE 160 GRAND RAPIDS, MI 49504 877-833-2668	ENECOTECH 39155 COUNTRY CLUB DR., SUITE B40 FARMINGTON HILLS, MI 48331 248-489-0809
	ENVIRONMENTAL PROFESSIONALS, INC. 25950 LABANA WOODS DR. TAYLOR, MI 48180 313-291-2214	ENVIRONMENTAL RESOURCES MANAGEMENT 3352 128TH AVE. HOLLAND, MI49424	INNOVATIVE ENVIRONMENTAL 9948 E. GRAND RIVER BRIGHTON, MI 48116 810-714-4959
Scope of Work	**MICROBIOLOGICAL REMEDIATION PROJECT** **AT DETROIT METROPOLITAN AIRPORT** **AIR TRAFFIC CONTROL TOWER** The contractor shall provide all the services, equipment, supplies, materials, and labor required. Work shall include, but not limited to, the following: **ALL FLOORS:** 1. Prior to performing microbiological remediation procedures, the contractor shall seal all critical penetrations and openings to the work area with a minimum of two layers of 6-mil polyethylene, and shall be responsible for ensuring adjoining areas are not exposed to the microbiological contamination during the remediation. 2. Remove any MCM between the bottom metal runner/track and the concrete floor; between the top metal runner/track and the structural deck; and between the metal stud and exterior concrete wall. 3. The contractor shall minimize dust generation and use the methodologies outlined in *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1) for dust prevention and suppression. 4. All removals and other cleaning procedures shall be conducted at night between the hours of 11:00 pm and 6:00 am. Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the building. 5. Once the mold has been removed and clearance has been achieved, and the stained surfaces have been cleaned, then remove all partition walls, doors and door frames, except those around the elevator core and stairwell. 6. Cut a 1/2" gap between the bottom of the gypsum board and the concrete deck. Fill the gap with a 2-hr fire-rated caulk in the remaining partition walls around the elevator core and stairwell corridor. 7. Paint elevator core exterior and stairwell corridor with mold resistant paint.		

D. Morse
08/08/08

8. Furnish and install fire-rated access panels in the center of the north and east elevator core wall. The bottom of the panel shall be 24" above the floor. Do not penetrate the shaft liner. See detail "B" on drawing DTW –D-ATCT-A11.

FLOOR 3

ROOM 327

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 15 linear feet of 18", water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 328

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The east (elevator shaft) wall, up to a height of 2', and the south (elevator shaft) wall, up to a height of 2', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 4

ROOM 427

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 4 linear feet of 11" and 6 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 428

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.
2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT room 428 in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1).
3. Remove and replace gypsum board, shaft liner, and insulation totaling approximately 243 square feet:
    a. The east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner).
    b. The south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner).
    c. **Elevator Shaft liner removal and replacement requires coordination with the Elevator Maintenance company and Air Traffic to schedule limited elevator shutdown time.**

FLOOR 5

ROOM 527

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist any contaminated areas prior to removal. Upon

completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines On Assessment And Remediation Of Fungi In Indoor Environments* (GARFIE) (See Specification Attachment 1).

3. Approximately 4 linear feet of 11" and 25 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

4. Remove and replace gypsum board and insulation totaling approximately 15 square feet, on the north wall, between the east wall and door to Room 527A, 2' wide to a height of 4' (surface layer) and 2' wide to a height of 3'6" (concealed layer).

ROOM 527A

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist any contaminated areas prior to removal. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) (See Specification Attachment 1).

3. Remove and replace gypsum board and insulation totaling approximately 5 square feet on the south wall, between the east wall and the door to Room 527, 2' wide to a height of 18" (surface layer) and 2' wide to a height of 12" (concealed layer).

ROOM 529

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.

2. The portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 6

ROOM 627

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.

2. Approximately 20 linear feet of 11" and 25 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 628

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.

2. The east (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

3. The south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 7

ROOM 727

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 3 linear feet of 18" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 727A

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The portion of the west wall between the cable tray and the north wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The south wall above the door to room 727, 3' wide to a height of 3', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

ROOM 728

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The east (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The south (elevator shaft) wall, up to a height of 4', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 8

ROOM 827

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 4 linear feet of 11" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 829

1. A mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting. A negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area.
2. The portion of the east wall, between the south wall and stairwell doorframe, 2" wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.
3. The adjacent south wall, from the southeast corner westward, 1' wide to a height of 8', shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

FLOOR 9

ROOM 927

1. The contractor shall provide additional cleaning procedures and pipe insulation removal/replacement.
2. Approximately 4 linear feet of 11" water stained and/or contaminated chilled and heating water pipe insulation shall be removed and replaced.

ROOM 928

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10

Decontamination Area.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT rooms 928, in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (see attachment 1).

3. Remove and replace gypsum board, shaft liner, and insulation totaling approximately 311 square feet:

   a. The east (elevator shaft) wall, 8' wide to a height of 5' (surface layer), 8' wide to a height of 4'6" (concealed layer), and 8' wide to a height of 4' (shaft liner).

   b. The south (elevator shaft) wall, 10' wide to a height of 5' (surface layer), 10' wide to a height of 4'6" (concealed layer), and 10' wide to a height of 4' (shaft liner).

   c. The northwest column beam enclosure, on the north wall, 6' wide to a height of 3' (surface layer), 6' wide to a height of 2'6" (concealed layer), and 6' wide to a height of 2' (shaft liner);

   d. The west wall, 3' wide to a height of 3' (surface layer), 3' wide to a height of 2'6" (concealed layer), and 3' wide to a height of 2' (shaft liner).

   e. Elevator Shaft liner removal and replacement requires coordination with the Elevator Maintenance company and Air Traffic to schedule limited elevator shutdown time.

FLOOR 10

ROOM 1028

1. A containment and negative pressure enclosure system shall be established as described in section 1B.9 Remediation Area. A decontamination unit shall be established as described in section 1B.10 Decontamination Area.

2. Cleanup and removal of moisture and microbiological contaminated gypsum board, shaft liner, and insulation in the DTW ATCT room 1028, in accordance with the guidelines established by the New York City Department of Health Entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (see attachment 1).

3. The north wall shaft liner in its entirety shall be HEPA vacuumed and then wet wiped with an approved cleaning solution.

4. Remove and dispose of existing carpet.

5. Remove and replace gypsum board, shaft liner, and insulation totaling approximately 792 square feet:

   a. The north (elevator shaft) wall, 22' wide for the full height (surface layer, concealed layer and shaft liner).

CAPITALIZATION AUTHORIZATION

Date: 07/18/08

RAPM:

Job Order Number			Commission Date:		
Project Title	DTW ATCT Microbiological Remediation				
Facility Location and Location ID	FAC	FACTYP	RWY #	LOC ID	CCC
	ATCT	ATCT		DTW	C81NB
City and State	Detroit, Michigan				
Project Remarks Moisture Damage Remediation Note:					
Closeout Type	☒ Full Close-out ☐ Partial Close-out	☒ Plant (Real Property) ☐ Electronic	Verified PMC	☐ Attached ☐ Sent to Logistics from SMO	
	PSR Complete:	Reimbursable?	On Airport Property?		

REAL PROPERTY INVENTORY

Fill in the asset descriptions, enter the "Percent of Asset" for each asset, then insert the "Percent of Total" subtotal for each asset type. Logistics and/or Accounting will apply values to each item on the RPI.

Asset Type	Asset Description	Percent of Asset	Percent of Total
Land	NA		
	Total		
Buildings			
	Total		
Other Structures	Drywall = $1,000		
	Total		
	GRAND TOTAL		

Constr./Installation Name RAPM Signature	Signature	Routing Symbol	Telephone Number

APPLICATION FOR CONSTRUCTION OR ALTERATION

Wayne County Airport Authority

For Detroit Metropolitan Wayne County and Willow Run Airports

(Airport Tenants only)

For Airport Use Only
Project Review No.
C/A **Permit** No.

INSTRUCTIONS: Use this form to apply for a Wayne County Airport Authority Construction/Alteration Permit to construct, enlarge, renovate, alter or remove any site or facility within the limits of Detroit Metropolitan Wayne County Airport or Willow Run Airport. This application must be accompanied with ten (10) sets of design reports, plans and specifications that describe the proposed work. Send completed application with original signature and accompanying documentation to: Wayne County Airport Authority; Planning and Capital Improvement Office; Detroit Metropolitan Wayne County Airport; L.C. Smith Terminal - Mezzanine; Detroit, Michigan 48242. Application must be typed or printed using ink.

1. Applicant Information (Tenant)

a. Official Name of Applicant (*Airport Tenants only*)
Federal Aviation Administration

b. Mailing Address (*Number, Street, City & Zip*)
FAA Cleveland ARTCC
326 E. Lorain St., Room 113
Oberlin, OH 44074

c. Applicant's Contact Person (*Authorized employee/agent*)
David P. Machala

d. Phone	e. Fax	f. E-mail Address
(440) 774-0826	**(440) 774-0835**	david.p.machala@faa.gov

2. Contractor Information

a. Prime Contractor (*or other to perform work*)

b. Mailing Address (*Number, Street, City & Zip*)

c. Contact Person

d. Phone	e. Fax	f. E-mail Address
( )	( )	

3. Proposed Project Information

a. Name of Building/Site to be Altered	b. Airport Building Number	c. Airport (*Check one*)
		☒DTW ☐ YIP

d. Area/Space of Building/Site affected by Proposed Project	e. Purpose of Construction or Alteration

f. Description of Work to be Performed (*use additional sheet if necessary*) Check Box if Additional Sheet is Attached ☐

See Attached Scope of Work

g. Estimated Design/Engineering Cost (*US Dollars*)	h. Estimated Construction Cost (US Dollars)
$ In House Government Estimate	**$110,000**

i. Submitted with this Construction or Alteration Application are the following:
☐ FAA Form 7460-1 ☐ Insurance Certificate ☐ Performance Bond ☐ Labor and Material Bonds

4. Applicant Authorization

All work shall be done at no expense to the Wayne County Airport Authority or the County of Wayne, and the applicant agrees to reimburse said Authority and County for damage to property of the Authority and the County. Applicant assumes any and all liabilities and further agrees to (1) Save harmless and indemnify the Airport Authority and the County; (2) Comply with all conditions under which a Construction or Alteration Permit is granted; (3) Pay the Authority any required review, inspection and permit fees within ten days of billing therefore, (4) Notify the Authority's Planning and Capital Improvement Office of the date the above work is to be commenced and the date the work is to be completed.

a. Applicant's Signature (*Airport Tenants only*)	b. Date

c. Applicant's Name	d. Title
David P. Machala	NPPM

DTW Trip Report
June 12, 2008

Performed an outside visual inspection of the facility with Mike Prieur, DTW SSC Coordinator and found no damage to the exterior caulk or sealant.

Performed a visual inspection from the subjunction level down, room by room of the tower shaft with the following observations:

> All doors that can be removed are still removed to improve air circulation within the tower shaft.
>
> No visible trace of standing water or further leaking from the precast joints.
>
> All fan coil units (heat) are on the "off" position.
>
> The old tower "storage" areas were warm and stagnant.
>
> Removed the plywood access panel in the old NATCA office and inspected the space between the drywall and the precast – absolutely no traces of moisture.

Talked to Steve McClinchey via telephone about the performance of the mechanical systems since the upgrade project last year - no complaints or major problems. Morris Ogunleye, the Mechanical Engineer for this project will access the system performance next week.

Future Steps
We need to analyze the temperature and humidity data to determine if additional work is required. We have no way of reducing humidity levels within the tower shaft currently, and may need to install dehumidifiers.

Consider consulting with DMJMH&N to re-access the facility in the current state and propose future action.

Detroit ATCT Indoor Workplace Health Survey

Prepared for:

Parsons Infrastructure and Technology Group Inc.
Parsons TSSC-III National Headquarters
955 L'Enfant Plaza North, S.W., Suite 8400
Washington, DC 20024

Prepared By:

Hala Madanat, PhD
Graduate School of Public Health
San Diego State University
and
Eugene C. Cole, DrPH
Department of Health Science
Brigham Young University

September, 2009

Approach to a Comprehensive Employee Health Survey

A comprehensive employee health survey of the Detroit Metro Airport Traffic Control Tower (ATCT) workers requires both quantitative and qualitative approaches. Workplace occupant perception of different aspects of the indoor environment is key, since it can influence both behavior and comfort. Additionally, perceptions and medical symptoms are not only related to the physical indoor environment, but also influenced by social and cultural impacts, organizational aspects, and lifestyle, as well as personality aspects and other individual factors.

Quantitative. The quantitative approach requires design of a comprehensive survey instrument to target current and former control tower workers employed during and since the onset of the water damage and mold contamination. It employs a customized design based upon the population and environmental situation of concern, in conjunction with existing and more standard approaches to indoor environmental quality in general.

Those participating in the survey are asked about workplace-associated health effects, temporal responses, and medical diagnoses, relative to job responsibilities and work hours, in addition to living conditions, activities, and personal behaviors away from the workplace. It is envisioned that the same instrument will likely be utilized to survey a worker control population within the Detroit Metro Airport located away from the control tower. The survey instrument can be self-administered, either by written responses or electronically via a web-based approach. Collected data is analyzed using standard statistical software (e.g. SPSS) and analytical approaches. Analysis of collected data is a comparative one across both survey groups, as well as in comparison with an available and appropriate indoor environmental quality worker survey of available baseline data from published sources.

Qualitative. The qualitative survey requires personal interviews of control tower employees in regard to adverse workplace health effects. This can involve a random sample approach wherein selected participants agree to discuss their workplace-related health issues in general, and as specific to their own situations. Interviews are conducted according to a previously developed series of guide questions.

Comparative assessments will be made in looking at control tower employees versus non-control tower airport workers, and control tower employees versus available large-scale health survey results from across the US.

The qualitative approach requires customized guide questions for the use in key interviews of a selected sample of the control tower workers. Such questions can elicit additional in-depth data on health symptoms and diagnosed conditions associated with the workplace. Collected data would also be analyzed using standard approaches to qualitative assessments.

Following all data collection and analyses, a technical report detailing the study approach, instruments used, final results, interpretation, and conclusions and recommendations, will be completed and provided as the final deliverable.