



## REQUEST FOR QUOTE

QUOTE# : CI 24 B 00671  
DATE: 11/06/2023  
DUE DATE: 11/28/2023

Please provide a competitive price quote for the listed services below. Contact Senior Project Manager, Kevin Pilate at 901-544-1882 or by email: [kpilate@memphisha.org](mailto:kpilate@memphisha.org)

Deadline for submitting a price quote is **Monday, November 28, 2023**, by 3:00 pm. Fax or email your quote to Kevin Pilate, Senior Project manager, Capital Improvements at 901-544-1882 or [kpilate@memphisha.org](mailto:kpilate@memphisha.org)

The Memphis Housing Authority is requesting a quote for the partial demolition and the installation of materials in two (2) units at Montgomery Plaza.

1. 144 Goodloe, Unit 2
2. 1430 Kansas, Unit 1

The contractor is responsible for all demolition and disposal of all materials not being reused. Daily debris removal is required. No debris is permitted on site at any time. The contractor is responsible for staging, storing, and securing all materials to be reused and is similarly responsible for newly purchased materials needed for a turnkey project. Costs for repairing or replacing any materials (provided by MHA) that are damaged due to contractor negligence shall be covered by the contractor at no additional cost to the owner.

The contractor shall inform the assigned Project Manager (PM) of any areas of concern or of any addition damage found during the demolition phase before proceeding with installation of new materials.

MHA strongly recommends that all potential bidders visit the job site to assess the existing conditions and provide a cost for a complete job. MHA reserves the right to award this project in its entirety, partially, or not at all.

One pre-bid conference shall be held on Tuesday November 14, 2023, at 10 a.m. at 700 Adams Ave. Memphis TN, 38105 Rm 216.

### **General Requirements:**

1. Active licenses and surety bonds.
2. The Contractor shall provide all the necessary permits, insurance, materials, supplies, labor, equipment, and supervision for a turnkey project. The selected contractor performing the scope of work listed below shall be licensed as required by the State of Tennessee. Scheduled work hours shall be from 8am – 4:30pm, Monday through Friday. All bidders shall visit the site to gain familiarity and field verify all dimensions.
3. The contractor is responsible for removing all debris daily and ensuring a safe environment for the workers and the residents.
4. The contractor is responsible for a safety plan for subcontractors, and the workspace.
5. The contractor shall be responsible for locking units and securing equipment at the end of each workday.

### **Scope of work:**

#### **Unit 144 Goodloe unit 2**

1. The contractor shall perform a 2 ft flood cut around the perimeter of the living space.
2. The contractor shall then remove all drywall starting at the left side of window all the way to the base of the stairway. (See Exhibit B)
3. The contractor shall be responsible for removing, storing, and preserving all reusable materials to include but not limited to:
  - Stairwell handrails, Backing, and Hardware.
  - Baseboard and quarter round.
  - Light switch and outlet cover.
  - Stair treads (where applicable)
  - Cabinets and countertops. (Not damaged and approved by Project Manager)
4. The contractor shall remove a portion of the ceiling starting at the window to the stairwell platform, with a 4ft width the entirety of the area. (See Exhibit B)
5. The contractor shall remove (Where applicable) any insulation material. (Replace with new)
6. Once all demo has been completed, the contractor shall contact the PM for a visual inspection of all opened drywall spaces.
7. The contractor shall be responsible for treating all open cavities for the microbial solution designed to eliminate mold. (See Exhibit C)
8. The contractor shall be responsible for the installation of new drywall, finishing, painting, and ceiling texture of the entire living space and kitchen space. (See Exhibit D for drywall Spec. and Exhibit E for Paint Color)
9. The contractor shall be responsible for completing all finishes on the first level of the unit to include but not limited to:
  - Securing cabinets and countertops.
  - Ensure that all plumbing fixtures are connected and operational.
  - Ensure that all trim, doors (functioning properly), base, and quarter round are installed and painted. (Match existing)



- Ensure that all light switch, outlet covers, and the electrical panel cover are installed. (Match existing)
10. The contractor shall perform an air scrubbing service to ensure air quality of the unit. (See Exhibit F for Air Scrubbing Spec.)
  11. The contractor shall be responsible for thoroughly cleaning the unit and the removal of all debris daily.

#### **Unit 1430 Kansas Unit 1**

1. The contractor shall remove and store the following items.
  - Upper and lower Cabinets.
  - Countertops.
  - Plumbing fixtures and hardware.
  - Lighting fixtures including rangehood.
  - Light switch and outlets with covers
  - Baseboard and trim.
2. The contractor shall remove and dispose of the drywall material and ceiling from the kitchen space.
3. The contractor shall remove any insulation. (Where applicable and replace with new material)
4. Once all demo has been completed, the contractor shall contact the PM for a visual inspection of all opened drywall spaces and cabinets.
5. The contractor shall be responsible for treating all open cavities for the microbial solution designed to eliminate mold.
6. The contractor shall be responsible for the installation of new drywall, finishing, painting, and ceiling texture of the kitchen space. (See Exhibit D for drywall Spec. and Exhibit E for Paint Color)
7. The contractor shall reinstall all finishes of the kitchen space to include but not limited to:
8. Securing cabinets and countertops.
9. Ensure that all plumbing fixtures are connected and operational.
10. Ensure that all trim, doors (functioning properly), base, and quarter round are installed and painted. (Exhibit E for Paint Colors)
11. Ensure that all light switch and outlet cover.
12. The contractor shall rehang smoke detector on second floor and install hardware on rear screen door.
13. The contractor shall be responsible for a thorough cleaning of the unit and the removal of all debris daily.
14. The Contractor shall be responsible for securing the HVAC Line set to the building over the rear entry door.

## **Project Execution**

1. No later than the first day following the Notice to Proceed, the Contractor shall submit a work schedule and product submittals on specified goods and materials for MHA approval. Allow MHA at least one day to review and provide a response.
2. Goods and services applied prior to MHA approval will be performed at the Contractor's risk. The cost to remove and apply the specified item(s) or approved substitute(s) shall not result in an additional cost to MHA.
3. The Contractor is required to submit a notification of service interruption, seventy-two (72) hours prior to disabling any utility service that will affect the residents.

## **Wage Rates**

Wage rates paid to employees shall be based on and not less than the latest Non-Routine Maintenance wage rates.

## **Insurance**

The Contractor shall provide and maintain adequate worker's compensation and comprehensive general liability insurance coverage for the complete period of the contract. The minimum Comprehensive General Liability coverage for this project is One Million Dollars and Zero Cents [\$1,000,000.00]

## **Allowances**

The bid form includes an allowance which will be used for unforeseen conditions not specified in the contract documents. Any work the contractor considers a change to the contract shall be approved by MHA prior to providing goods and services. Unused allowance remains the property of MHA and shall be deducted from the contract value via a deductive change order prior to project-close out.

## **Payment**

Upon approval of work, the Contractor shall submit one payment application for this work.

## **Site Visits**

Site visits can be scheduled with Kevin Pilate via email at [kpilate@memphisha.org](mailto:kpilate@memphisha.org). or via phone 901-544-1882 (Office) or 901-395-4013 (Cell)

## **Questions**

Any prospective bidder desiring an explanation or interpretation of the solicitation, scope of work, etc. must request it in writing to Kevin Pilate, Senior Project Manager, Capital Improvements via email to [kpilate@memphisha.org](mailto:kpilate@memphisha.org) no later than 4:00 p.m. CST November 17, 2023,.



## **Quotes**

A firm fixed price must be provided. The bidder is asked to provide a quote relating to the requirements outlined in this document. Quotes can be emailed to Kevin Pilate at [kpilate@memphisha.org](mailto:kpilate@memphisha.org) or delivered via mail or hand delivered. Hand deliveries and mail should be addressed to:

Kevin Pilate, Senior Project Manager  
Capital Improvements Department  
Memphis Housing Authority  
700 Adams Avenue, Room 107  
Memphis, TN 38105

All quotes shall be submitted on the Bid Form no later than 3:00 p.m. CST, **Tuesday, November 28, 2023**. Reference Exhibit A for the Quote Form. All work is to be completed within Thirty (30) business days from the date of the Notice to Proceed.

## **Addenda Items**

All changes to the work scope will be posted on the MHA website: [memphisha.org](http://memphisha.org) and sent to all plan's holders. Search under the RFP/RFQ link.

**Exhibit A**

Bid Form

**Montgomery Plaza Addresses:**

1. General Conditions, Overhead and Profit: \$ \_\_\_\_\_
  
2. General Allowance: \$ 6,000.00 \_\_\_\_\_
  
3. Mobilization: \$ \_\_\_\_\_
  
4. 144 Goodloe Avenue, Unit 2 \$ \_\_\_\_\_
  
5. 1430 Kansas, Unit 2 \$ \_\_\_\_\_

Description	Unit	Quantity	Unit Price:	Total:
Additional drywall removal	Per SQFT	1000		
Additional drywall Installation	Per SQFT	1000		
Total drywall Allowance				\$ _____

**BASE BID TOTAL:**

\$ \_\_\_\_\_  
(Sum of General Conditions, General Allowance, Mobilization and Dwelling Units)



The undersigned acknowledges the receipt of the following Addenda and has included them in this bid.

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**NOTICE TO PROCEED**

The undersigned agrees to commence actual work on the site with an adequate force & equipment within seven [7] business days of the date of "Notice to Proceed."

**CONSTRUCTION TIME**

The undersigned agrees to complete all of the work described by the aforementioned "Contract Documents" by **the time as listed below.**

**BASE BID: Thirty [30] consecutive business days (Monday – Friday) 8 a.m. to 4:30 p.m.**  
from the Notice to Proceed.

**LIQUIDATED DAMAGES**

The undersigned agrees to pay, as liquidated damages, the sum of **One hundred Fifty dollars and zero cents (\$150.00)** per day for work per day per uncompleted contracting beginning day one after completion date.

**PERFORMANCE & PAYMENT BOND**

For bids greater than \$25,000.00, upon receipt of a written acceptance of this bid, Bidder shall deliver performance & payment bond in accordance with HUD 5369 [10/02], "Instructions to Bidders for Contracts, Public & Indian Housing Programs, page 3, clause 10.

**BID BOND**

For bids greater than \$25,000.00, the bid bond or security attached in the sum of \_\_\_\_\_ dollars [\$\_\_\_\_\_] is to become the property of the Owner in the event of the Contract and bond are not executed with the time set forth, as liquidated damages for the delay and additional expense to the Owner, who is entitled to the difference between the amount of this bid and the amount for which a contract for the work is subsequently executed. The check shall be made payable to the Memphis Housing Authority.

**PAYMENT**

Payment at the lump sum price bid herein shall include replacement of any items included herewith as appurtenant and incidental to these work items are all ancillary items associated with said work.

SUBMITTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
[Signature]

NAME & TITLE: \_\_\_\_\_

Exhibit B (Existing Conditions)





Exhibit B Continued

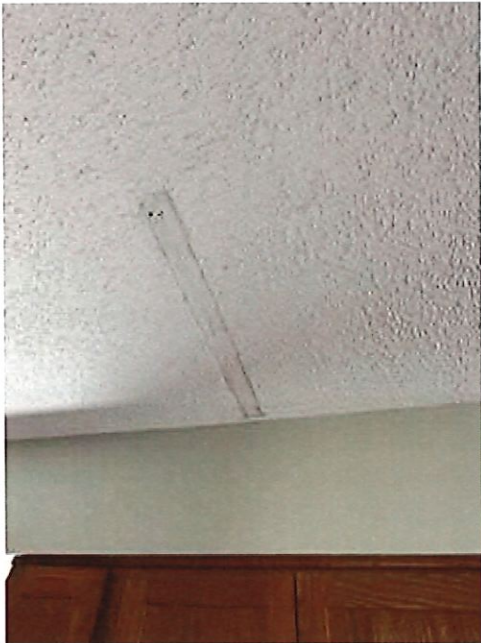


Exhibit B Continued



144 Goodloe unit 2





Exhibit B Continued



Exhibit B Continued





Exhibit B Continued



**Exhibit C**

**REMOVAL AND DISPOAL OF MOLD/IMPACTED MATERIALS**

**REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED  
MATERIALS**

CONDUCTED AT MULTIPLE RESIDENTIAL AND PUBLIC SPACE  
PROPERTIES

MEMPHIS HOUSING AUTHORITY  
700 ADAMS AVENUE  
MEMPHIS, TENNESSEE

TIOGA PROJECT NO.: 231434.00

OCTOBER 2023

PREPARED BY



ENVIRONMENTAL  
CONSULTANTS  
357 NORTH MAIN STREET  
MEMPHIS, TN 38103

A handwritten signature in black ink, appearing to read "Joe Littlefield", is written over a horizontal line.

Joe Littlefield  
Program Manager



**REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS**

**PART I. GENERAL CONDITIONS – MOLD REMEDIATION**

**1.01 SUMMARY**

- A. This section specifies the methods, procedures, and requirements related to the removal and disposal of Mold/Water Impacted Materials, including, but not limited to:
  - 1. Regulatory requirements
  - 2. Submittals
  - 3. Personal protective measures
  - 4. Execution
  - 5. Inspections
  - 6. Waste handling

**1.02 SUMMARY OF WORK**

- A. The Contractor shall furnish all labor, materials, services, permits, insurance, and equipment which is specified, shown or reasonably implied to perform the following tasks:
  - 1. Residential Units: The mold/water impacted material remediation under this contract consists of the proper remediation and or removal and disposal of the following mold/water impacted materials in residential units: drywall, insulation baseboards cove base, flooring HVAC components.
  - 2. Public Spaces: The mold/water impacted material remediation under this contract consists of the proper remediation and or removal and disposal of the following mold/water impacted materials in community centers: drywall, insulation baseboards cove base, flooring HVAC components.
  - 3. All other work and items either shown in drawings or included in the specifications.
- B. Protection, where appropriate, of all temporary facilities and utilities and property inside and outside the designated work areas and zones.
- C. The Contractor is responsible for all of the necessary items to accomplish this work to include but not be limited to: obtaining and payment for all labor, materials, services, necessary permits, bonding, insurance, and transportation/disposal costs.
- D. The Contractor shall be responsible for all means and methods required to perform the work in accordance with the Contract Documents and within the time limits established in the Contract and this Section.
- E. Administrative requirements necessary to execute the Work, including but not limited to: preparation and delivery of all required submittals
- F. Packaging, transportation and disposal (including all prescribed, implied or otherwise required waste characterization and analysis) of all hazardous and non-hazardous materials and components shown, specified or otherwise implied.

**1.03 WORK INCLUDED**

- A. The requirements of this Section govern specific aspects of the administration of the Work. The Contractor is responsible for compliance of his own staff and of his subcontractors with the requirements in this Section.

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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

- B. The Contractor is responsible for all corrections of and changes in the Work, and for any delays resulting from his failure to conform to these requirements, and for all costs arising there from.
- C. Individual requirements for work provided for under this Section may be described in other Sections of this Specification.

### 1.04 PERFORMANCE OF WORK

- A. Work of the Remediation Contractor: The Contractor or subcontractor to perform the following work shall be experienced and licensed as required to perform hazardous material remediation in the State of Tennessee.
  - 1. All work performed by the mold remediation Contractor shall be in accordance with Federal EPA and ANSI/IICRC guidelines, best management practices, and the specifications.

### 1.05 EXISTING CONDITIONS

- A. Based upon testing conducted by the Owner, the interior walls, ceilings, wood framing, and flooring of residential units and community center spaces appear to have elevated moisture levels and in many instances, there is evidence of visible mold on these components. The work under this contract is designed to remove mold/water impacted building materials in these spaces and properly clean/remediate the impacted building components that are not being removed.
- B. Where required by the Owner, post cleaning replacement of building materials will be performed after the areas have been cleared.
- C. All activities to remove mold/water impacted materials in this building shall be performed according to all mold remediation guidelines issued by Federal EPA, ANSI/IICRC guidelines and the project specifications.
- D. It is currently unknown whether there are any building materials that can be considered to be not impacted by mold. All materials are to be assumed to be impacted by mold and should be contained (bagged/sealed) prior to removal from the building.
- E. It is the intent of the Contract Documents to include the remediation of all mold-containing materials identified in the Contract Documents. Nothing shall be charged back to the Owner for the contractor's failure to include removal and disposal of all items under the Base Bid.
- F. Equipment, electrical boxes and conduit, and piping may be present in the work area. Unless for cleaning purposes, these materials should not be disturbed or otherwise moved or re-routed without permission from the Owner.

### 1.06 COMMUNICATION

- A. At no time shall the Contractor communicate information about remediation activities to the Owner's employees or other Contractors unless directed to by the Owner.
- B. The Contractor shall only communicate to the Owner or Owner's Representative through individuals identified by the Owner as being involved in this work.
- C. The Owner alone shall be responsible for communicating with the Owner's employees and contractors.

### 1.07 SUBMITTALS



## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

- A. Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work under this Contract. Submit proof with Bid.
- B. Permits: Obtain any necessary permits in conjunction with this project for the removal, demolition, transportation, and disposition of mold/water impacted materials, and provide timely notification of such actions as may be required by Federal, State, regional, and local authorities.
- C. Personnel Training: At the Pre-construction Meeting, Contractor shall submit (1) declaration certifying that all the Contractor's employees have been adequately trained, and (2) a photocopy of training certificates for each employee from their respective training agency or organization.
- D. Respirators: Submit at Pre-construction Meeting manufacturer's certification that the respirators to be used in this Project comply with government/regulatory agency requirements. Contractor's certifications for each employee must clearly state that each employee has been fit tested and properly trained for respirators and the Contractor must have a respirator program as required by 29 CFR 1910.134.
- E. Medical Examinations: Submit proof that all persons providing labor and/or professional services who will be entering contaminated areas have had current (less than one year prior to the date of their participation on the Project) medical examinations. Furnish physician's Written Opinion to the Owner's representative at the Pre-construction Meeting, or prior to each person's commencing work on this Project, and for each person subsequently providing labor and/or professional services at the job site for whom a certificate was not initially furnished.
- F. Medical Records: Maintain complete and accurate records of employees' medical examinations for a period of at least 30 years after termination of employment and make records of the required medical examinations available for inspection and copying to: The Assistant Secretary of Labor for Occupational Safety and Health, The Director of the National Institute for Occupational Safety and Health (NIOSH), authorized representatives of either, and an employee's physician upon the request of the employee or former employee.
- G. Product Submittals and Substitutions: Comply with pertinent provisions of applicable Sections.
- H. Abatement Product Data: Submit manufacturer's catalogue, samples, Safety Data Sheets, (SDS) and other items needed to demonstrate fully the quality of the proposed abatement materials in advance of performing work on site.. Under no circumstances shall proposed materials be used before written approval from the Owner or Owner's Representative. Submittals are required if the following materials are proposed (not necessarily a complete list.) Do not submit data on products not proposed for this project:
  - 1. Encapsulant
  - 2. Cleaner
  - 3. Fungicide
  - 4. Foam
  - 5. Drywall
  - 6. Paint >1 PERM
  - 7. Any other material to be used onsite
- I. Manufacturer's Data
  - 1. Local exhaust equipment
  - 2. Vacuum equipment



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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3. Respirators
  4. Differential pressure monitor
- J. Mold Remediation Plan: The Contractor shall submit for approval, a detailed plan of the work procedures to be used in the removal of mold and or water impacted materials as well as the clean-up and replacement of removed building materials. Such a plan shall include:
1. Location of Work Areas.
  2. Layout and construction details of Decontamination Enclosure Systems.
  3. Project schedule including important milestones, critical paths and interface of trades involved in the Work.
  4. Detailed description of the method to be employed in order to prevent the spread of contamination, including negative air equipment calculations. To include a description of how the Contractor will prevent the release of mold contamination from the containment when applying the spray foam which requires much greater air exchanges in the containment.
  5. A description of the sequencing of mold-related work, disposal plan, type of wetting agent to be used, respirators, protective equipment, and differential pressure monitoring device.
  6. Names of Superintendent, Foremen, Project Manager and other key personnel, and their daytime and emergency telephone numbers.
  7. Security Plan including sketches necessary to clearly describe the plan.
  8. Emergency evacuation plan for injured workers, fire and other emergencies. Include a list of emergency phone numbers and a route map to the nearest medical facility for emergency treatment.
  9. Fire watch Plan including any sketches necessary to clearly describe the plan.
  10. A contingency plan, in the event of a major contamination incident caused by fire, a large breach in the Work area containment barrier, the opening of stairwell doors, breakage of the building's exterior windows or sabotage. Such a plan will focus on how to maintain safety and order when the building is fully occupied by office employees and other building users.
  11. Submit written evidence that the landfill for disposal is approved for mold disposal by the EPA, state and local regulatory agencies. Submit detailed delivery tickets, prepared, signed, and dated by an agent of the landfill, certifying the amount of mold materials delivered to the landfill, within 30 calendar days after transport from the site. Failure to provide this waste shipment record may result in notification to the EPA.
  12. The Owner's Representative and Owner must approve the Mold Remediation Plan in writing at least 5 workdays before the start of any work.
- K. Equipment Certification: Submit at Pre-construction Meeting manufacturers' certification that vacuums, negative air pressure equipment filters, and other local exhaust ventilation equipment conform to ANSI Z9.2-1979.
- L. Rental Equipment: When rental equipment is to be used in removal areas or to transport waste materials, a copy of the written notification provided to the rental company informing them of the nature of use of the rented equipment shall be signed by the rental company and submitted to the Owner's Representative at the Pre-construction Meeting.
- M. Encapsulant manufacturer's certification (when required) that the Contractor is an approved applicator of the encapsulants to be used on this project.
- N. Scaffolding: Submit to the Owner and Owner's Representative prior to remediation work, a description of the scaffolding design, methods of installation, methods of decontamination prior to removal from containment, and safety precautions to be used demonstrating that the scaffolding will be safe and adequate for the purpose for which it will be used. The Contractor shall follow the manufacturers recommendation for assembly and anchoring. Additionally, workers shall be equipped with fall protection when working on scaffolding at elevations

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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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greater than 6 feet.

### 1.08 1.04 APPLICABLE REGULATIONS AND PUBLICATIONS

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

- A. Code of Federal Regulations (CFR) Publications:
- |                           |  |
|---------------------------|--|
| 29 CFR 1910.132           | General Requirements - Personal Protective Equipment                         |
| 29 CFR 1910.133           | Eye and Face Protection  |
| 29 CFR 1910.134           | Respiratory Protection   |
| 29 CFR 1910.145           | Specifications for Accident Prevention, Signs and Tags                       |
| 29 CFR 1910.146           | Confined Space   |
| 29 CFR 1910.1020          | Access to Employee Exposure and Medical Records                              |
| 29 CFR 1910.1200          | Hazard Communication   |
| 29 CFR 1910 Subpart D     | Walking – Working Surfaces   |
| 29 CFR 1926, All Subparts | Safety & Health Regulations for Construction                                 |
| 40 CFR 241                | Guidelines for the Land Disposal of Solid Wastes                             |
| 40 CFR 257                | Criteria for Classification of Solid Waste Disposal Facilities and Practices |
- B. American National Standard Institute (ANSI) Publications:
- |            |  |
|------------|--|
| Z9.2-1979  | Fundamentals Governing the Design and Operation of Local Exhaust Systems |
| Z88.2-1980 | Practices for Respiratory Protection                                     |
- C. U. S. Environmental Protection Agency (EPA):
- |                       |   |
|-----------------------|---|
| Pub. No.402-K-01-001  | Mold Remediation in Schools and Commercial Buildings Guide                    |
| Pub. No. 402-F-91-102 | Building Air Quality Guide: A Guide for Building Owners and Facility Managers |
- D. American Society for Testing Materials (ASTM) Publications:
- |       |   |
|-------|---|
| P-189 | Specifications for Encapsulants for Friable Asbestos-Containing Materials |
|-------|---|
- E. National Institute of Occupational Safety and Health (NIOSH) Publications:
- |                 |  |
|-----------------|--|
| Pub. No. 87-116 | Guide to Industrial Respiratory Protection |
|-----------------|--|
- F. Underwriters Laboratories, Inc. (UL) Publications:
- |               |  |
|---------------|--|
| 586-77(R1982) | Test Performance of High Efficiency, Particulate, Air Filter Units |
|---------------|--|
- G. Other Publications:
- |                  |  |
|------------------|--|
| ACGIH            | Bioaerosols Assessment and Control                                     |
| ANSI/IICRC S-500 | Standard and Reference Guide for Professional Water Damage Restoration |
| ANSI/IICRC S-520 | Standard and Reference Guide for Professional Mold Remediation         |

### 1.09 GENERAL APPLICABILITY OF CODES, REGULATIONS AND STANDARDS



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

- A. Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.
- B. In addition to detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of Federal, State, regional, and local authorities regarding, handling, storing, transporting, and disposing of mold/water impacted materials. Comply with the applicable requirements of the current issue of 29 CFR 1910 and 1926. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where specification requirements and referenced documents vary, the most stringent requirement shall apply.

### 1.10 CONTRACTOR RESPONSIBILITY

- A. The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and Local regulations pertaining to work practices, OSHA requirements, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State and Local regulations. The Contractor shall hold the Owner and the Owner's Representative harmless for failure to comply with any applicable work, OSHA requirements, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

### 1.11 DEFINITIONS

- A. **Aerosol:** A system consisting of particles, solid or liquid, suspended in air.
- B. **Air Lock:** A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area. (See Decontamination Enclosure System Plan in the Drawing section of this Project Manual)
- C. **Air Monitoring:** The process of measuring the fiber content of a specific volume of air in a stated period of time.
- D. **Air-Purifying Respirator:** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- E. **Air Sampling Professional:** The professional contracted or employed to supervise air monitoring and analysis schemes. This individual is also responsible for recognition of technical deficiencies in Worker protection equipment and procedures during both planning and on-site phases of a Remediation Project. Acceptable Air Sampling Professionals include Industrial Hygienists, Environmental Engineers and Environmental Scientists with equivalent experience in mold air monitoring and Worker protection.
- F. **Amended Water:** Water to which a surfactant (chemical wetting agent) has been added to improve penetration into ACM that are being removed.
- G. **Authorized Person:** Any person authorized by the employer and required by work duties to be present in regulated areas. Building/facility owner is the legal entity, including a lessee, which exercises control over management and recordkeeping functions relating to a building and/or facility in which activities covered by this standard take place.
- H. **Authorized Visitor:** The Owner's Project Team members, the Owner's Representative, and any representative of a regulatory or other agency having jurisdiction over the Project.
- I. **Barrier:** Any surface that seals off the work area to inhibit the movement of spores.
- J. **Biocides/Sporicides:** A chemical compound or biological product used to kill or disinfect, control the growth of, or repel a specific organism or spore.
- K. **Bridging Encapsulant:** The application of a non-penetrating sealant over the surface of asbestos containing material to prevent the release of asbestos fibers.
- L. **CFR:** Code of Federal Regulations.
- M. **Clean Room:** An uncontaminated area or room which is a part of the Worker



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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- Decontamination Enclosure with provisions for storage of Workers' street clothes and protective equipment.
- N. **Clearance Sampling:** Air samples collected at the conclusion of a mold remediation action to determine if airborne mold concentrations are below those levels acceptable for persons to reoccupy an area.
- O. **Contained Work Area:** A Work Area which has been Isolated, Plasticized, and equipped with a Decontamination Enclosure System.
- P. **Contaminated Items:** Any objects that have been exposed to fungal contamination without being sealed off or isolated.
- Q. **Contract Specifications:** A set of guidelines that a contractor must follow when conducting an asbestos abatement job.
- R. **Critical Barrier:** One or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.
- S. **Curtained Doorway:** A device to allow ingress or egress from one area to another while permitting minimal air movement between the areas, typically constructed by placing three overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, and securing the vertical edge of the outer two sheets along the opposite vertical side of the doorway.
- T. **Decontamination Area:** An enclosed area adjacent and/or connected to the regulated area and consisting of an equipment room, shower area, and clean room which is used for decontamination of workers, materials and equipment.
- U. **Demolition:** The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.
- V. **Disposal Bag:** A 6 mil thick leak-tight plastic bag used for transporting waste from work area and to disposal site.
- W. **Electrical Systems:** The system of wires, lights, power generation equipment, and related facilities to produce, convey, and utilize electrical power in a building.
- X. **Encapsulant (sealant):** A liquid material which can be applied to building materials and which controls the possible release of mold spores from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- Y. **Encapsulation:** All herein-specified procedures necessary to apply an encapsulant to building materials to control the possible release of mold spores into the ambient air.
- Z. **Enclosed Regulated Area:** A regulated area which has been isolated by physical boundaries to prevent the spread of mold dust, fibers, or debris. A local exhaust system is required.
- AA. **Enclosure:** A resilient structure, built (or sprayed) around ACM designed to prevent disturbance and contain released fibers.
- BB. **Fungicide:** A pesticide used to kill fungi or their spores.
- CC. **Ground Fault Interrupter:** A device which automatically de-energizes any high voltage system component which has developed a fault in the ground line.
- DD. **Heating, Ventilating, and Air Conditioning (HVAC) System:** The system of pipes, ducts, and equipment (air conditioners, chillers, heaters, boilers, pumps, fans) used to heat, cool, move, and filter air in a building. HVAC Systems are also known as mechanical systems.
- EE. **HEPA Filter:** A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of all monodispersed particles (Asbestos fibers) equal to or greater than 0.3 microns in mass median aerodynamic equivalent diameter.
- FF. **HEPA Vacuum Equipment:** Vacuuming equipment with a HEPA filter system.
- GG. **Make-up Air:** Supplied or recirculated air to offset that which has already been exhausted from an area.
- HH. **Negative Differential Pressure Respirator:** A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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- outside atmosphere.
- II. **Negative Differential Pressure:** Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area)
- JJ. **Negative Air Pressure Equipment:** A portable local exhaust system equipped with HEPA filtration and capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.
- KK. **NIOSH:** The National Institute for Occupational Safety and Health which was established by the Occupational Safety and Health Act of 1970. The official approving agency for respiratory protective equipment which tests and certifies respirators.
- LL. **OSHA:** The Occupational Safety and Health Administration which was created by the Occupational Safety and Health Act of 1970; serves as the enforcement agency for safety and health in the workplace environment.
- MM. **Owner:** Smith & Nephew, Inc.
- NN. **Owner's Representative:** Tioga Environmental Consultants, Inc.
- OO. **Protection Factor:** The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
- PP. **Regulated Areas:** Established work areas where airborne concentrations of mold, exceed or can reasonably be expected to exceed the permissible exposure limit prescribed.
- QQ. **Removal:** All herein-specified procedures necessary to remove mold and/or moisture impacted materials from the designated areas and to dispose of these materials at an acceptable site.
- RR. **Respirator:** A device designed to protect the wearer from inhalation of harmful atmospheres.
- SS. **Safety Data Sheets:** Written or printed material concerning a hazardous chemical which is prepared in accordance with specific guidelines.
- TT. **Surfactant:** A chemical wetting agent added to water to reduce surface tension and improve penetration.
- UU. **Visible Emissions:** Any emissions containing particulate mold material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.
- VV. **Wet Cleaning:** The process of eliminating mold contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as mold contaminated waste.
- WW. **Work Area (Also known as "Regulated Area"):** Designated rooms, spaces, or areas of the Project in which Asbestos Abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A Contained Work Area is a Work Area which has been Isolated, Plasticized, and equipped with a Decontamination Enclosure System. An Isolated (non-contained) Work Area is a Work Area which is isolated but has not been Plasticized and may or may not be equipped with a Decontamination Enclosure System.

### 1.12 DESCRIPTION OF WORK

- A. The work covered by this section includes the handling of mold/water impacted materials which are encountered during this remediation activity, and the incidental procedures and equipment required to protect workers and occupants of the building or area, or both, from contact with respirable/nuisance dust and/or mold spores. Post remediation air testing shall be conducted by the owner.
- B. This work may also included the replacement of all removed building materials with suitable products that are consistent with existing materials currently in use.



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

### 1.13 PROTECTION OF EXISTING WORK TO REMAIN

- A. Contractor shall protect areas, equipment, etc. without contamination of adjacent work. Where such work is contaminated, restore work to the original condition. The Contractor is financially responsible for all damage and repairs to existing materials or surfaces.

### 1.14 SEQUENCE OF WORK

- A. Mold Remediation work specified shall be completed prior to work by other trades which may damage, disturb or cause to become airborne dust/mold spores which may be present. The Contractor shall be responsible for coordinating access to each area with the Owner. The Contractor shall be responsible for notification of and payment of any fees required to perform this work. Refer to PART 4.11 of these specifications for additional details in sequencing work for this project.

### 1.15 REPORTING REQUIREMENTS

- A. During remediation activities the Contractor shall submit a weekly job progress report to the Owner's Representative detailing remediation-activities. Include review of progress with respect to previously established mold remediation plan, milestones and schedules, major problems and actions taken, injury reports, equipment breakdown and a compilation of the week's bulk material and all sampling results for testing conducted by the Contractor. The progress report shall be signed by the Contractor.

### 1.16 ADMINISTRATION OF THE CONTRACT

- A. All Work is to be performed under the scrutiny of the Owner or Owner's Representative, who shall be free to review all Work

### 1.17 SAFETY

- A. Submit at the Pre-construction Meeting written procedures for evacuation of injured Workers. Aid for seriously injured Workers shall not be delayed in order to comply with standard decontamination procedures. It is the responsibility of the Contractor to decide if the seriousness of the injury warrants noncompliance with the standard decontamination procedures.
- B. The Contractor is required to notify the Owner's Representative if a safety hazard is identified.
- C. The Contractor and all personnel working for the Contractor shall be trained on and shall comply with the applicable health and safety standards contained at 29 CFR 1910 and 1926 including but not limited to standards for lockout/tagout, scaffolding, ladders, confined space, electrical, and hazardous communication.
- D. The Contractor shall have a comprehensive job safety meeting at the beginning of the project with the Owner's Representative in attendance. The Contractor shall give 72 hours' notice of this job safety meeting. The Contractor shall thereafter hold tail-gate safety meetings once per week. The Contractor shall keep a record of the topics and persons in attendance. Workers shall each sign an attendance sheet for each safety meeting.

### 1.18 CAUTION SIGNS AND LABELS

- A. Provide caution signs (typical to construction sites) at approaches to regulated areas containing airborne mold/respirable dust. Locate signs at such a distance that personnel may read the

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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

sign and take the necessary protective steps required before entering the area. Currently, mold impacted material is not a regulated special/hazardous waste and does not require special labeling. All removed material shall be disposed of as solid waste unless otherwise regulated.

### QUALITY CONTROL

- A. Safety Compliance: In addition to detailed requirements of this Specification, comply with laws, ordinances, rules, and regulations of federal, state, regional, and local authorities and publications regarding handling, storing, transporting, and disposing of mold impacted waste materials. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the Work. Where the requirements of this Specification and referenced documents vary, the most stringent requirement shall apply. When requirements of reference documents vary, the most stringent requirement shall apply.
- B. Contractor shall have at least one copy each of 29 CFR Part 1910 - Occupational Safety and Health Standards, 29 CFR 1926.1101, 1200-03-11-.02, 40 CFR Part 61, Subparts A & M, and all pertinent state and local regulations at his office and at the job site.
- C. Before the commencement of any work at the site, the Contractor shall post bilingual (as appropriate) EPA and OSHA caution signs in and around the Work Area to comply with EPA and OSHA regulations.

## PART II. WORKER PROTECTION

### 2.01 TRAINING PROGRAM

- A. Within 12 months prior to assignment to mold remediation work, each employee shall be instructed for a minimum of 32 hours by an EPA approved training institution with regard to the methods of handling and controlling hazardous materials, proper use, fitting instructions, and limitations of respirators; the nature of operations that could result in exposure to mold/nuisance dust, the importance of necessary protective controls to minimize exposure and any necessary instructions in the use of these controls and procedures; the appropriate work practices for the performing the mold removal job; medical surveillance program requirements; and a review of 29 CFR 1910.1200 and the use and requirements for protective clothing and decontamination procedures. Fully cover engineering and other hazard control techniques and procedures. Maintain complete and accurate records of training for each employee. Records shall be maintained for 1 year beyond the last date of employment.
- B. Emergency evacuation procedures to be followed in the event of worker injury, fire, power failure, etc. shall be included in the Worker Training program.

### 2.02 MEDICAL SURVEILLANCE REQUIREMENTS

- A. Before exposure mold, the Contractor will provide each employee performing labor or professional services at the Project site with a current comprehensive medical exam, including a history of respiratory and gastrointestinal diseases, meeting the general definition outlined in 29 CFR 1910.134. The medical report shall contain a statement from the examining physician that the employee can (or cannot) function normally wearing a respirator or that the safety or health of the employee or other employees will or will not be impaired by his use of a respirator. No employee will be allowed to enter the Work Area without having first provided a copy of their Medical Examination, to the Owner's Representative and until the submitted medical has been approved by the Owner's Representative.
- B. The requirement for medical certification must have been satisfied within the last 12 months. The same medical examination shall be given on an annual basis to employees engaged in



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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an occupation involving asbestos and within 30 calendar days before or after the termination of employment in such occupation.

### C. Information Provided to the Physician

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

1. A description of the affected employee's duties as they relate to the employee's exposure;
2. The employee's representative exposure level or anticipated exposure level;
3. A description of any personal protective and respiratory equipment used or to be used; and
4. Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

## 2.03 PERSONAL PROTECTIVE EQUIPMENT

- A. Work clothes shall consist of disposable non-breathable protective whole body clothing, head coverings, gloves, and foot coverings. Furnish disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber gloves for comfort but shall not be used alone. Use tape to secure sleeves at the wrists and to secure foot coverings at the ankles. As required for job site hazards, personnel shall be supplied with washable hard hats to remain in work area for duration of project.
- B. Eye protection and hard hats shall be available as appropriate or as required by applicable safety regulations.
- C. Provide Authorized Visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they are required or wish to enter the Work Area.

## 2.04 RESPIRATORS

- A. Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing mold/water impacted materials and respirable dust. Provide, personnel engaged in the removal or demolition of building material impacted by mold/water with full face air purifying respirators as specified. During the performance of work when removal or demolition of mold/water impacted materials is not underway, the Contractor shall provide worker protection as required to comply with OSHA regulations.
- B. Contractor shall maintain a Respiratory Protection Plan in accordance with 29 CFR 1910.134.
- C. At the sole discretion of the Contractor, use Powered Air Purifying Respirator (PAPR) for the abatement of mold/moisture impacted building materials. Equip full face respirators with a nose cut or other antifogging device as would be appropriate.
- D. Supply full-face air-purifying respirators with HEPA type filters labeled with NIOSH Certification for particulate. In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH Certification.
- E. The Contractor shall provide Workers with approved, permanently personally-issued and marked respirators with changeable filters. The Contractor shall provide a sufficient quantity of filters approved for mold remediation so that Workers can change filters during the workday. Filters shall not be used any longer than one (1) workday or whenever an increase in breathing resistance is detected. The respirator filters shall be stored at the job site in the Clean Room and shall be totally protected from exposure to mold before their use.



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- F. **Non-permitted respirators:** Do not use single use, disposable, quarter face or half-face respirators.
- G. Require that respiratory protection be used at all times that there is any possibility of a disturbance of mold/water impacted materials whether accidental or intentional. Require that a respirator be worn by anyone in a work area at all time, regardless of activity, during a period that starts with any operation which could cause dust until the area has been approved re-occupancy by the Owner's Representative.
- H. Provide at least two (2) extra PAPR respirators when this type of respirator is required. Provide instruction on the use of the above respirators to Authorized Visitors.

### 2.05 WORKER PROTECTION PROCEDURES - TO BE POSTED IN CLEAN ROOM

Bilingual (English and other appropriate language[s]) Worker Protection Procedures must be posted in the Clean Room. If the primary spoken language of all Workers is English, the bilingual procedures are accepted.

- A. Each Worker and Authorized Visitor shall, upon entering the job site: remove street clothes in the Clean Room or Area and put on a respirator and clean protective clothing before entering the Equipment Room or the Work Area.
- B. All Workers shall, each time they leave the Work Area: remove gross contamination using a HEPA vacuum from clothing before leaving the Work Area; proceed to the Equipment Room and remove all clothing except respirators; still wearing the respirator, proceed naked to the showers; clean the outside of the respirator with soap and water while showering; remove the respirator; thoroughly shampoo and wash themselves.
- C. Following showering and drying off, each Worker shall proceed directly to the Clean Room and dress in their personal clothing. Before reentering the Work Area, each Worker and Authorized Visitor shall put on a clean respirator and shall dress in clean protective clothing.
- D. Contaminated protective clothing and work footwear shall be stored in the Equipment Room when not in use in the Work Area. At appropriate times or upon completion of Asbestos Abatement, dispose of protective clothing and footwear as contaminated waste.
- E. Workers removing waste containers from the Equipment Decontamination Enclosure shall enter the Waste Loadout from outside, wearing a respirator and dressed in clean disposable coveralls. No Worker shall use this system as a means to leave or enter the Decon Area or the Work Area.
- F. The disposable clothing worn outside the Work Area shall be of different color or markings from the disposable clothing worn inside the Work Area.
- G. Workers shall not eat, drink, smoke, or chew gum or tobacco while in the Work Area.
- H. Workers and Authorized Visitors with beards or who are unshaven shall not enter the Work Area.

## PART III. PRODUCTS

### 3.01 GENERAL

- A. Contractor shall furnish, provide and utilize the following products in the Work as specified.

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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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### 3.02 PROTECTIVE COVERING (PLASTIC)

- A. Six (6) mil or four (4) mil polyethylene sheets as required in sizes to minimize the frequency of joints. For work with elevated fire risks, the protective covering shall be flame retardant.

### 3.03 TAPE

- A. Duct Tape 2" or wider, or equal, and capable of sealing joints of adjacent sheets of plastic, and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials, and capable of adhering under both dry and wet conditions, including use of amended water.

### 3.04 AIRLESS SPRAYER

- A. Airless Sprayer: An airless sprayer, suitable for application of cleaning material and/or wetting agents, shall be used.

### 3.05 WATER SPRAYER

- A. The water sprayer shall be an airless or other low pressure sprayer for water and cleaning applications

### 3.06 SCAFFOLDING

- A. Scaffolding, as required to accomplish the specified work, shall meet all applicable safety regulations. See Section 1.07 Submittals, paragraph N. for information on what needs to be submitted regarding scaffolding in advance of starting the project.

### 3.07 TRANSPORTATION EQUIPMENT

- A. Transportation equipment, as required, shall be suitable for loading, temporary storage, transmit, and unloading of waste without exposure to persons or property.

### 3.08 DISPOSAL CONTAINERS AND BAGS

- A. Appropriately labeled clear, double six (6) mil sealable polyethylene bags as a minimum.
- B. (If required) Appropriately labeled, sealable, impermeable drum containers.

### 3.09 SURFACTANT

- A. Surfactant, or wetting agent, for amending water will be 50 percent polyoxyethylene polyglycol ester and 50 percent polyoxyethylene ether, or equivalent, at a concentration of one (1) ounce per five (5) gallons of water.

### 3.10 BIOCIDES AND DETERGENTS

- A. Biocides/sporicides proposed for use must be approved by the Owner prior to being brought on site. Prior to mobilizing on site, the Contractor shall submit SDS for all materials proposed for use. All cleaning and other chemicals must be approved in writing by the Owner prior to bringing to job site.
- B. Detergents used on this project must be recommended as an "approved use material" by EPA guidance.

### 3.11 ENCAPSULATING SEALER (if required)



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- A. Any encapsulant proposed for use must be approved by the Owner prior to being brought on site.
- B. Shall be a penetrating or bridging type, pollution-free, nontoxic, with a Class A fire classification as specified herein. Encapsulants with the ingredient Methylene Chloride are not acceptable. Material shall be flexible when cured, resistant to weathering, oxidation, aging and abuse.
- C. Shall be a water-dispensed coating, insoluble in water when cured and undiluted
- D. Shall have a written certification from the manufacturer that the encapsulant is compatible with the replacement material and will safely withstand temperatures of all surfaces on which the encapsulation will be applied.

### 3.12 TOOLS AND EQUIPMENT

- A. Provide suitable tools for mold and moisture impacted building material removal and encapsulation. Tools may be used for the stripping, removal, encapsulation and disposal activities including but not limited to: knives, stiff nylon brushes, sponges, rounded edge shovels, brooms and carts.
- B. Negative air pressure equipment (abatement enclosures, if required): High-efficiency particulate air (HEPA) filtration systems shall have filtration equipment in compliance with ANSI Z9.2-1979, local exhaust ventilation. No air movement system or air filtering equipment shall discharge unfiltered air outside the Work Area.
- C. To the extent possible, all negative air pressure equipment shall be discharged outside rather than to another part of the building.
- D. Manometer shall have a built-in alarm. Continuous recording required for abatement enclosures.
- E. HEPA Vacuums shall comply with ANSI Z9.2-1979.
- F. Provide Type "ABC" dry chemical extinguisher, or a combination of several extinguishers of NFPA recommended types for the exposures in each area. Provide a minimum of 1 per 100 linear feet.

## PART IV. EXECUTION

### 4.01 WORK AREA PREPARATION

- A. Contractor shall start work by coordinating the work schedule with the Owner.
- B. The Contractor shall, at a minimum, construct containment adjacent to the components to be remediated at a distance of not less than 6 feet from the wall stretching from the floor to the ceiling. Where required, the containment area will encompass the entire room or unit.
- C. Seal openings in areas where the release of dust and particulate matter is expected. Establish a regulated area with the use of curtains, portable partitions, or other enclosures in order to prevent the escape of dust from the contaminated area. All penetrations of the floor, walls, and ceiling shall be sealed with 6-mil polyethylene plastic and duct tape. Seal joints using spray adhesive and duct tape. Openings will be allowed in enclosures of regulated areas for the supply and exhaust of air for the local exhaust system.



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- D. Openings shall be allowed in the enclosure of the regulated area for supply/make-up air. These openings shall be flapped from the inside of the enclosure and shall be constructed such that they shall seal, airtight, in the event of a loss of negative pressure from inside the enclosure.
- E. Once the Contractor has completed the construction of the decontamination units and negative pressure enclosure, a demonstration of the positive airflow through all parts of the work area shall be performed to the satisfaction of the Owner or Owner's Representative.
- F. No mold/water impacted materials shall be disturbed until the Owner or Owner's Representative has given the authority to begin.

### **4.02 PERSONNEL DECONTAMINATION UNIT**

- A. Provide a decontamination unit consisting of a single decontamination chamber separated by air locks. Require all persons without exception to pass through this decontamination unit for entry into and exiting from the work area for any purpose. Do not allow parallel routes for entry or exit. All equipment and material shall enter and exit through the decontamination unit.
- B. Personnel shall don personal protective equipment and clothing prior to entering the decontamination unit.
- C. When exiting the work area, personnel shall vacuum off themselves using a HEPA vacuum then enter the decontamination unit. Here personnel shall vacuum off themselves again using a HEPA vacuum and remove protective clothing. Disposal clothing shall be placed in a six (6) mil sealable polyethylene bag. Personnel may then exit the decontamination unit.
- D. Prior to removing equipment from the work area it shall be wiped down and or vacuumed using a HEPA vacuum before moving it to the decontamination unit. In the decontamination unit it shall be wiped down again and/or vacuumed. Equipment can then be removed from the decontamination area.
- E. Prior to removing bags of waste materials from the work area they shall be wiped down and passed into the decontamination area. Here they will be placed in a clean covered cart. In the decontamination area the cart will be wiped down and/or vacuumed with a HEPA vacuum and then it can be removed from the decontamination unit for transport through the facility to the receiving roll-off for disposal.
- F. Clean debris and residue from inside the Decontamination Units on a daily basis. Damp wipe and/or HEPA vacuum all surfaces after each shift change. If the changing room of the Personnel Decontamination Unit becomes contaminated with mold-containing debris, abandon the entire decontamination unit and erect a new decontamination unit. Under no circumstances will the Contractor be allowed to continue work if the decontamination unit is dirty or in disrepair. Any tears in the barriers of the unit shall be repaired immediately.

### **4.03 LOCAL EXHAUST SYSTEM**

- A. Provide a local exhaust system in all regulated areas to establish negative pressure prior to disturbing mold/water impacted materials. Filters on exhaust equipment shall be UL 586 labeled HEPA filters. Local exhaust equipment shall be sufficient to maintain a visible draw of air from unsealed areas or building exterior (test with smoke tubes). Placement of these units shall be determined on site in order to gain the most efficient use of the equipment. The local exhaust system shall be operated continuously until the regulated area enclosure is removed. Replace filters as required to maintain the efficiency of the system.
- B. Supply the required number of air filtration units to provide a minimum of six (6) air changes per hour in each regulated area. During foam application the area will require up to 24 air



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exchanges per hour.

- C. The cabinet shall be constructed of steel or other durable materials able to withstand damage from rough handling and transportation. The width of the cabinet shall be less than 2 feet 6 inches to fit through standard-size doorways. The cabinet shall be factory sealed to prevent dust from being released during use, transport, or maintenance. Access to and replacement of all air filters shall be from the intake end. The unit shall be mounted on casters or wheels.
- D. Rate capacity of fans according to usable air-moving capacity under actual operating conditions. Use centrifugal-type fan.
- E. The final filter shall be the HEPA type. The filter media (folded into closely pleated panels) must be completely sealed on all edges with a structurally rigid frame. A continuous rubber gasket shall be located between the filter and the filter housing to form a tight seal. Each filter shall be individually tested and certified by the manufacturer to have an efficiency of not less than 99.99 percent when challenged with 0.3 um dioctylphthalate (DOP) particles. Each filter shall bear a UL586 label to indicate ability to perform under specified conditions.
- F. Pre-filters which protect the final filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of prefiltration are required. The first stage prefilter shall be a low efficiency type (e.g., for particles 10 um and larger). The second stage (or intermediate) filter shall have a medium efficiency (e.g., effective for particles down to 5 um). Prefilters and intermediate filters shall be installed either on or in the intake grid of the unit and held in place with special housings or clamps.
- G. Each unit shall be equipped with a magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed. A table indicating the usable air-handling capacity for various static pressure readings on the magnehelic gauge shall be affixed near the gauge for reference, or the magnehelic reading indicating at what point the filters should be changed, noting cubic feet per minute (CFM) air delivery at that point. Provide units equipped with an elapsed time meter to show the total accumulation hours of operation.
- H. The unit shall have electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter. Units shall be equipped with automatic shutdown system to stop fan in the event of a major rupture in the HEPA filter or blocked air discharge. Warning lights are required to indicate normal operation, too high a pressure drop across the filter (i.e., filter overloading), and too low of a pressure drop (i.e., major rupture in HEPA filter or obstructed discharge).
- I. Components shall be approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL). Each unit shall be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet shall be grounded.
- J. Test the negative pressure system before any mold/water impacted material is disturbed. After the work area has been prepared, the decontamination facility set up, and the exhaust unit(s) installed, start the unit(s) (one at a time). Demonstrate operation and testing of negative pressure system to the Owner.
- K. Demonstrate the operation of the negative pressure system to the Owner. Demonstration shall include, but not be limited to, the following: (1) Plastic barriers and sheeting moving lightly in toward the work area; (2) Curtain of decontamination units moving lightly in toward the work area; (3) There is a noticeable movement of air through the decontamination unit. If required, use smoke tube to demonstrate air movement from clean room to shower room, from shower room to equipment room, and from equipment room to work area. Document any testing of daily field report.



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- L. Modify the negative pressure system as necessary to successfully demonstrate the operations outlined above.
- M. Start exhaust units before beginning work (before any mold/water impacted material is disturbed). After remediation work has begun, run units continuously to maintain a constant negative pressure until cleaning of the work area is complete. Do not turn off units at the end of the work shift or when remediation operations temporarily stop. Start remediation work at a location farthest from the exhaust units and proceed toward them. If an electric power failure occurs, immediately stop all cleaning work and do not resume until power is restored and exhaust units are operating again without assistance from generators. At completion of the cleaning work, allow exhaust units to run to remove airborne dust that may have been generated during remediation work and cleanup and to purge the work area with clean makeup air. The units may be required to run for a longer time after decontamination, if extremely dusty conditions were encountered during the remediation work.
- N. When a final inspection indicates that the area has been properly cleaned, exhaust units may be removed from the work area. Before removal from the work area, remove and properly dispose of prefilter, and seal intake to machine with 6 mil polyethylene to contain residue dust inside unit.
- O. In the event post remediation testing is included in the final inspection process, run machines until instructed otherwise by the Owner's Representative.

### **4.04 TEMPORARY WATER SERVICE CONNECTION**

- A. All connections to the existing potable water systems shall include backflow protection. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to the existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage the existing finishes or equipment.

### **4.05 ELECTRICAL SERVICE**

- A. Comply with applicable NEMA, NECA, and UL Standards and governing regulations for materials and layout of temporary electric service.
- B. Temporary Power (as required): Provide service to the subpanel with minimum 60 amp, 2 pole circuit breaker or fused disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.
- C. Voltage Differences (as required): Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.
- D. Ground Fault Protection (as required): Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for plug-in connection of power tools and equipment.
- E. Electrical Power Cords (as required): Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.
- F. Lamps and Light Fixtures (as required): Provide general service incandescent lamps of wattage indicated or required for adequate illumination. Protect lamps with guard cages or

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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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tempered glass enclosures, where fixtures are exposed to breakage.

- G. Where possible, the Contractor shall use the Owner's existing power service. However, if the power is not available or is insufficient for the Contractor's needs, then the Contractor shall be responsible for supplying his own power. Refer to paragraphs "Ground Fault Interrupter Protection" and "Temporary Branch Power" of this section for additional requirements.
- H. Wire and cable shall be protected during storage and handling and shall be in first class condition when installed. Ground conductors shall be solidly bonded to ground at electric service point for temporary power center feeders.
- I. The Contractor shall furnish and install all necessary supports, etc., as required for rigidly and securely mounting all electrical items.

### 4.06 GROUND FAULT INTERRUPTER PROTECTION

- A. All electrical connections inside mold work area shall be protected by GFCI (Ground Fault Circuit Interrupt).
- B. GFCI Receptacles, Coverplates, and GFCI Testers: All receptacles shall be GFCI Type meeting the following standards: (1) NEMA 5-20R Configuration. (2) UI 943 Class A Compliance. (3) NEMA WD-1-1.10 Conformance. (4) ASTM B-117-73 Salt Spray (fog) test - 500 hour endurance for certification as "corrosion resistant".
- C. GFCI receptacles shall have an integral indication light that shows when they are powered. Cover plates for all GFCI receptacles shall be weather-proof type polycarbonate for FD box mounting. GFCI receptacle tester shall meet the following requirements: (1) NEMA 5-15P for configuration. (2) Be capable of checking polarity and ground continuity. (3) Be capable of producing 5 milliamperes of leakage current to enable trip testing for GFCI receptacles. Refer to 1.7 for applicable publications.
- D. Conductor and Cable, 600V: All wire and cables shall be of insulated copper. All wires and cables shall be manufactured in accordance with the National Electrical Code and the detailed standards of the Underwriters Laboratories and shall be listed by the latter organization. Insulation of general building wiring shall be 600 volt, code type THWN/THHN. Insulation of circuit wiring shall be color coded as follows:

<u>208/120 Volt</u>	<u>Phase</u>	<u>480/277 volt</u>
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	White/Yellow Stripe
Green	Ground	Green/Yellow Stripe

- 1. Each phase conductor of each branch circuit shall be of one color from its point of origination at the panelboard through all outlet boxes, pull boxes and junction boxes or its outer extremity. Minimum size wiring for branch circuits shall be #10 AWG solid. All conductors, #8 and larger, shall be stranded.
- E. The Contractor shall test all GFCI receptacles with the specified tester on a daily basis. The test shall be conducted prior to start of work at beginning of work day. Test shall be documented with written records being kept. Records shall be available to the Owner's Representative at the job site and arranged as follows: (1) Person performing test. (2) Date and time test performed. (3) Trip level for each receptacle. (4) Comments regarding receptacles removed from service or as otherwise warranted.



## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

- F. Receptacles having a trip level greater than seven milliamperes shall be immediately removed from service and replaced. Receptacles shall then be tagged as defective. Portable cords shall be visually inspected at the time of the GFCI receptacle test. Documentation for the inspection shall be entered in the same record as used for the GFCI receptacles. The cords shall be individually tagged to facilitate identification. Any cord damaged to the extent that the insulation is broken shall be taken out of service. There shall be no acceptable means of repairing damaged cords.

### 4.07 TEMPORARY BRANCH POWER (IF REQUIRED)

- A. Temporary branch power center(s), number as required, shall consist of the following items: (1) Branch circuit panelboards as follows: NEMA 3R enclosure, 100 Ampere main breaker, twenty four circuits, 20 Ampere, single pole circuit breakers, 22,000 Ampere interrupting capacity, panel grounding bus, panel feeder shall consist of a minimum of five #2 AWG conductors. The feeder size shall be increased, as required, to limit a maximum of 3 percent full load voltage drop at the panelboard. Conduit shall be rigid galvanized steel and liquidtight flex, sized in accordance with NEC (2) GFCI receptacles as follows: 24 GFCI receptacles as specified, single gang cast iron FD boxes with three #10 AWG conductors in 1/2 inch rigid galvanized steel conduit to panel. Weatherproof covers as specified. (3) Branch power center backboards as follows: one panel and twenty-four GFCI receptacles, as specified, shall be considered as a single power center, each panel shall be mounted on a single sheet of 3/4 inch by 4 feet 0 inches by 6 feet 0 inches B-C grade plywood with a 4 inch by 4 inch wood frame. All wood shall be Fire Retardant Pressure Treated Material.

### 4.08 SEQUENCE OF WORK

- A. The following is the sequence of work for mold impacted materials in MHA owned residential units.
1. Lock-out/tag-out all HVAC Systems serving area.
  2. Establish and construct containment area.
  3. The containment area shall be constructed to include, at a minimum, a project area inclusive of all areas with mold/moisture impacted materials to be removed. Any doorway which will not be used for entry or egress shall be adequately sealed in a way which will maintain the integrity of the differential air pressure within the containment area.
  4. Install critical barriers.
  5. Install air lock and decontamination unit.
  6. Establish negative pressure (6 air changes per hour)
  7. Remove curtains/carpet/carpet adhesive/baseboards – place in 6 mil poly disposal bags/wrap with 6 mil poly for disposal.
  8. Remove carpet and pre-clean bare flooring and cover with one layer of 6 mil poly
  9. Remove sheetrock from the project area from floor level to the ceiling or a minimum height of 24 inches, or 18 inches beyond the last visible signs of water damage or mold growth, whichever is greater. Any underlying paper insulation, fiberboard, or other porous material inside wall cavities should also be removed if it exhibits any signs of mold impact or moisture accumulation. Cabinet components in the kitchen shall be removed to access and remove any sheetrock with visible mold growth.
  10. All impacted building materials (e.g.- wood framing and ceiling elements) behind the removed sheetrock walls will be sanded/scrubbed with an EPA-approved fungicidal agent to remove any visible surface staining and mold growth. This action is to be followed by a round of HEPA vacuuming. These materials must then be wiped down with an EPA approved sanitizer/disinfectant and allowed to dry. This will be followed by a final round of HEPA vacuuming.



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

11. After the impacted framing elements have been cleaned and dried, it is recommended that the impacted framing receive an application of a mold growth inhibitor on areas with staining from mold impact then let dry.
12. All building surfaces (e.g.- walls, ceilings, floors, HVAC register/vents) not subject to removal in these areas should be HEPA vacuumed and then wiped down with an EPA-approved sanitizing agent to remove mold spores that may have settled during remedial activities. Similarly carpeting that is not removed should be HEPA-vacuumed in adjacent rooms.
13. Clean HVAC interior, evaporator coil, and exterior housing using HEPA Vacuum and detergent. Do not use biocides on any HVAC system components in the unit.
14. Upon completion of cleaning, the area will be visually inspected by the Owner's Representative for thoroughness. If the area is not visually clean, the Contractor will be required to reclean deficient areas at no additional cost to the Owner.
15. Containment areas will receive no less than 24 hours of continuous air scrubbing and dehumidification following remedial and final cleaning activities to allow for sufficient cleaning of the air and reduction of airborne mold spore levels, as well as the removal of excess accumulated moisture.
16. Upon passing the final visual inspection and clearance air sampling, the Contractor may remove containment, critical barriers, air lock and decontamination unit, and negative air machine from the area.
17. If required by the Owner, Contractor may begin replacement of walls, ceilings, flooring, or baseboards with new materials that are approved by the Owner.

### 4.09 WORK PROCEDURE

- A. Perform mold/water impacted material removal and demolition in accordance with the IICRC S-500 and S-520 Standards as specified herein. Use means and methods to minimize and control dust during all phases of work. Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, drinking, chewing tobacco or chewing gum shall not be permitted in the regulated area.
- B. Personnel of other trades not engaged in the removal and demolition of mold/water impacted materials shall not be allowed to work in regulated areas with proper training and PPE. Contractor shall isolate work area from remainder of building. Establishing a regulated area, construction of a personal decontamination unit, and establishment of negative air pressure shall be performed prior to disturbance of any mold/water impacted material.
- C. All workers will be required to wear half-face or full-face air purifying respirators or PAPR, non-breathable protective clothing, and appropriate hand and foot protection. Breathable/poly propylene suits will not be allowed on this project.
- D. Air locks and/or decontamination unit will be required at entry/exit to all work areas. Workers will be required to decontaminate prior to exiting all work areas. Workers are expected to perform dry decontamination procedures prior to leaving work area. A pump-up sprayer will be located in the airlock leaving the work area to allow workers to wash hands and face upon exiting work area.
- E. Biocides/sporicide and cleaners to be used on this project must be approved by the Owner before being brought on site.

### 4.10 REMOVAL OF BUILDING COMPONENTS

- A. After isolation of regulated areas as described in previous sections and initiation of negative pressure system, an inspection of the area shall be requested in writing by the Contractor. Upon approval of inspection, by the Owner's Representative, removal of mold/water impacted materials may commence.



## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

- B. General Procedures: HEPA vacuum as necessary during removal, cutting, or other handling to reduce the release of dust. Remove material and immediately place in plastic disposal bags. Where unusual circumstances prohibit the use of plastic disposal bags, the Contractor shall wrap and seal materials in 6 mil polyethylene sheeting.
- C. Mold/ water impacted materials shall be removed in manageable sections with breakage kept to a minimum. Removed material should be containerized before moving to a new location for continuance of work.
- D. Mold/water impacted materials shall not be dropped or thrown to the ground. Material should be removed as intact sections whenever possible and carefully lowered to the ground. Materials between 15 and 50 feet above the ground may be containerized at elevated levels or placed into inclined chutes or scaffolding for subsequent collection and containerization.
- E. Containers (6-mil polyethylene bags) shall be sealed when full. Double bag waste when there is a potential for puncturing bags from sharp materials. Bags shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cords. Bags shall be decontaminated on exterior surfaces by wet cleaning before being placed in clean drums or a second disposal bag. Where unusual circumstances prohibit use of plastic disposal bags or drums, the Contractor shall submit, in the remediation plan, an alternate proposal for removal, containerizing and disposal of the mold/water impacted materials.
- F. Mold-/water impacted waste materials with sharp edged components (e.g., broken floor tiles, nails, screws, tin sheeting, ceiling grid) that could otherwise tear bags shall be placed into drums or burlap bags inserted into 6-mil polyethylene bags for disposal.
- G. The Contractor shall take all equipment or material from the work area through the Decontamination Unit.

### **4.11 WORK PROCEDURE DEVIATIONS**

- A. Under certain circumstances the location of HVAC Ductwork or other non-moveable building equipment may prevent the ability for mold and or moisture impacted building materials to be completely removed and or cleaned. Under these circumstances the Contractor shall present alternate methods in the Mold Remediation Plan (Section 1.07) that describe how these areas will be treated to ensure that mold spores are not able to escape the wall cavity where they are to remain as they are discovered.

### **4.12 ENCAPSULATION (IF REQUIRED)**

- A. Use only materials that have been tested in accordance with ASTM E-84 and that are approved by the Owner.

### **4.13 CLEANING OPERATIONS**

- A. After removal of all designated mold containing materials in the Scope of Work, the Contractor shall immediately begin wet wipe cleaning operations.
- B. After wet wiping the entire area shall be cleaned using a HEPA vacuum.
- C. At completion of wet wipe/cleaning operation the Contractor shall request the Owner or Owner's Representative to perform a visual clearance inspection. The Contractor together with the Owner or Owner's Representative will inspect the work area for completeness. All mold must be removed from the work area prior to final visual inspections. If there is any visual

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## **REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS**

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material remaining, then the area will not pass visual inspection. Once the area has passed the visual inspection, then the area shall be locked down with the appropriate encapsulant. Refer to section 4.12 Encapsulation of this section for additional requirements.

### **4.14 VISUAL INSPECTION AFTER CLEANUP**

- A. Prior to the performance of final clearance air sampling, the Contractor's Competent Person shall perform a visual inspection for mold dust/residue. If residue is found, another wipe down/vacuuming shall be performed by the Contractor at no additional cost.

### **4.15 MONITORING AFTER FINAL CLEANUP**

- A. After the removal site has passed the visual inspection, the Owner's Representative shall provide final clearance air sampling as required. Should any of the final air samples indicate an elevated spore count, the Contractor shall take appropriate actions to reclean the area and shall repeat the final air monitoring. All cost for recleaning and retesting shall be the responsibility of the Contractor.

### **4.16 SITE INSPECTION**

- A. While performing mold removal work, the Contractor shall be subject to onsite inspection by the Owner's Representative who may be assisted by safety or health personnel. If the work is in violation of specification requirements, the Owner's Representative will request the Owner issue a stop work order to be in effect immediately and until the violation is resolved. Standby time and expenses required to resolve all violations shall be at the Contractor's expense.

### **4.17 CLEANUP AND DISPOSAL**

- A. Cleanup: Maintain surfaces of the regulated area free of accumulations of visible dust. Restrict the spread of dust and debris; keep waste from being distributed over the general area. Do not dry sweep or blow down the space with compressed air. Clean all surfaces in the work area and other contaminated areas with water and/or HEPA vacuum equipment. After cleaning the work area, allow sufficient settlement of dust and wet clean or clean with HEPA vacuum equipment all surfaces in the work area. When mold removal, disposal, and cleanup are complete, the Contractor shall certify, in writing, that the mold removal work is complete. Do not remove the regulated area enclosure and caution signs prior to the Owner's Representative's receipt of the certification. The Owner's Representative will visually inspect the affected surfaces for residual material and accumulated dust. The Contractor shall reclean areas showing dust or residual mold materials. Notify the Owner's Representative before unrestricted entry is permitted.

### **4.18 DISPOSAL OF WASTE MATERIAL**

- A. At the present time, there are no regulations specifically governing mold/water impacted wastes. All waste that is not lead or asbestos containing may be disposed of as construction and demolition debris. Please follow all federal, state and local regulations related to solid waste disposal.

### **4.19 RE-ESTABLISHMENT OF THE WORK AREA AND SYSTEMS**

- A. Re-establishment of the work area shall only occur following the completion of clean-up procedures and after passing visual inspection by the Consultant and clearance air sampling as required.
- B. The Contractor, Owner and the Owner's Representative shall visually inspect the work area for any remaining visible residue. Evidence of mold/water impacted materials will necessitate



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## REMOVAL AND DISPOSAL OF MOLD/WATER IMPACTED MATERIALS

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additional cleaning to be performed at the Contractor's expense.

- C. Following satisfactory clearance of the work area, remaining barriers may be removed and disposed of as solid waste.

### 4.20 REIMBURSEMENT OF COSTS OF THE OWNER OR THE OWNER'S REPRESENTATIVE

- A. In the event that reviews and/or Clearance Testing by the Owner's Representative or regulatory agencies shows that the Work Area or any portion of the Work Area is not decontaminated or if the Work is not in conformance with the Contract Documents, the Owner, Owner's Representative and his Consultants will record all time, tests and project-related expenses expended to monitor the Work until the work is in compliance. All time, and expenses recorded by the Owner, Owner's Representative and his Consultants to monitor the above work, and all time, tests and project related expenses incurred by the Owner and Owner's Representative and his Consultants outside the Project Work Days, Work Hours or Contract Time shall, at the discretion of the Owner, be paid for by the Contractor. The Contractor, promptly upon receipt of the billing from the Owner, shall reimburse the Owner at the normal billing rate of the Owner or the Owner's Representative and his Consultants, or the Owner is authorized to withhold funds from the Contract Sum, for all time spent by the Owner, Owner's Representative and his Consultants for reviews, testing, and other project related expenses when any of the above conditions occur.

### 4.21 STOPPING THE WORK

- A. If, at any time, the Owner's Representative decides that Work Practices are violating pertinent regulations, these Specifications or, in his opinion, endangering Workers or the public, he will immediately notify the Contractor (followed up in writing) that operations shall cease until corrective action is taken, and the Contractor shall take such corrective action before proceeding with the Work. Loss or Damages due to a Stop Work Order shall be borne by the Contractor.

### 4.22 CLOSE-OUT DOCUMENTS

- A. At the completion of work the Contractor will be required to submit the following close-out documents:
  1. Daily Field Reports
  2. Waste Shipment Manifest
  3. Landfill Receipt Record
  4. Biological Testing Sample Results
  5. Visitor and Worker Log-in Sheets
  6. Worker Training Certifications (Current)
  7. Worker Medical Certifications
  8. Worker Fit Test Certificates
  9. Application for Payment (Itemized)

END OF SECTION

**Exhibit D**

**DRYWALL SPECIFICATION**



**SECTION 09 29 00  
GYPSUM BOARD ASSEMBLIES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings, Contract Conditions and Division 01 – General Requirements apply to work of this section.

**1.2 SUMMARY**

- A. Provide interior gypsum wall board assemblies as indicated on the Drawings, as specified and as required for proper completion of the work.
- B. Related Sections include the following:
  - 1. Division 7 Section "Building Insulation" for insulation installed in gypsum board assemblies.
  - 2. Division 9 for Acoustical Insulation and Sealants.

**1.3 DEFINITIONS**

- A. Gypsum Board Terminology: Refer to ASTM C 11 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated. Where accessory products are specified to be as recommended by a manufacturer, submit evidence of the manufacturer's recommendation with the associated product literature.

**1.5 QUALITY ASSURANCE**

- A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire- resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Fire-Resistance-Rated Assemblies: Indicated by design designations as indicated on the Drawings.
- B. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1. STC-Rated Assemblies: Indicated by design designations from GA-600, "Fire Resistance Design Manual."
- C. Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- D. All gypsum wallboard products must be manufactured domestically, within the United States.
- E. All gypsum ore must be mined and all gypsum byproduct ("synthetic gypsum") must be produced within North America.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover, in the dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.
- C. Stack gypsum panels flat to prevent sagging.

#### 1.7 SUBMITTALS

- A. Product Data: Submit product data for each type of product indicated. Where accessory products are specified to be as recommended by a manufacturer, submit evidence of the manufacturer's recommendation with the associated product literature.

### PART 2 - PRODUCTS

#### 2.1 STEEL FRAMING MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or acceptable equal:
  1. Consolidated Systems, Inc.
  2. Dale Industries, Inc. - Dale/Incor.
  3. Dietrich Industries, Inc.
  4. MarinoWare; Division of Ware Ind.
  5. National Gypsum Company.

#### 2.2 GYPSUM WALLBOARD MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:



1. G-P Gypsum Corp.
2. National Gypsum Company.
3. United States Gypsum Co.
4. Temple-Inland Forest Products Corporation

### 2.3 GYPSUM WALLBOARD

#### A. Locations:

	Location	Board Type
1	General – Gypsum board walls/ceilings	Regular Type
2	Fire Rated-Gypsum board walls/ceilings	Type X
3	Non-Rated Walls in <b>within six feet of areas where water may be splashed on walls.</b>	Mold- and Moisture-Resistant Gypsum Board
4	Fire-Rated walls in <b>within six feet of areas where water may be splashed on walls.</b>	Fire-Rated Mold- and Moisture-Resistant Gypsum Board
5	Stair Well Walls	Sheetrock® Mold Tough® VHI or equal, mold resistant, abuse-resistant gypsum board

#### B. Regular Type

1. Thickness: 5/8 Inch (15.9 mm), except as otherwise indicated on drawings.
2. Long Edges: Tapered.

#### C. Fire-Rated Gypsum Wallboard: ASTM C 36. Type X:

1. Thickness: as indicated, or as required by UL design.
2. Long Edges: Tapered.
3. Locations: As indicated and where required for fire-resistance-rated assembly.

#### D. Fire-Rated Mold- and Moisture-Resistant Gypsum Board

1. Thickness: 5/8 inch
2. Width: 4 feet.
3. Length: 8 feet.
4. Weight: 2.23 pounds per square foot.
5. Edges: Tapered.
6. Surfacing: 100% recycled paper coverings on face, back and long edges; green color on face.
7. Flexural Strength, Parallel (ASTM C473): Not less than 46 lbf.
8. Flexural Strength, Perpendicular (ASTM C473): Not less than 147 lbf.
9. R-Value (ASTM C518): Not less than 0.56.
10. Nail Pull Resistance (ASTM C473): Not less than 87 lbf.
11. Humidified Deflection (ASTM C473): Not more than 5/8 inch.
12. Hardness, Core, Edges, and Ends (ASTM C473, ASTM C1396): Not less than 15.
13. Water Absorption (ASTM C630, ASTM C1396): Less than 5 percent of weight.
14. **Mold Resistance (ASTM D3273): 10, in a test as manufactured.**

A. Mold- and Moisture-Resistant Gypsum Board

1. Thickness: 5/8"
2. Width: 4 feet.
3. Length: 8 feet.
4. Weight: 2.23 pounds per square foot.
5. Edges: Tapered.
6. Surfacing: 100% recycled paper coverings on face, back and long edges; green color on face.
7. Flexural Strength, Parallel (ASTM C473): Not less than 46 lbf.
8. Flexural Strength, Perpendicular (ASTM C473): Not less than 147 lbf.
9. R-Value (ASTM C518): Not less than 0.56.



10. Nail Pull Resistance (ASTM C473): Not less than 87 lbf.
  11. Humidified Deflection (ASTM C473): Not more than 5/8 inch.
  12. Hardness, Core, Edges, and Ends (ASTM C473, ASTM C1396): Not less than 15.
  13. Water Absorption (ASTM C630, ASTM C1396): Less than 5 percent of weight.
  14. **Mold Resistance (ASTM D3273): 10, in a test as manufactured.**
- B. Cementitious Backer Panels: At Tub/Shower Surrounds: Provide cementitious backer units complying with ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints. Thickness: Manufacturer's standard thickness, but not less than 1/4 inch (6.4 mm). Acceptable products include:
1. Manufacturers/Products: C-Cure; C-Cure Board 990; Custom Building Products; Wonderboard; USG Corporation; DUROCK Cement Board; Thickness: As indicated on Drawings.
  2. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
  3. Fastener Requirements: Provide corrosion-resistant fasteners of size and type indicated that comply with requirements specified in this Article for material and application.
- C. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

## 2.2 STEEL FRAMING

- A. Comply with specified requirements. Comply with ASTM C 754 for conditions indicated
- B. Provide steel sheet components: Complying with ASTM C 645 requirements for metal and with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
- C. Steel Studs and Runners: Provide studs and runners complying with ASTM C 645. EQ studs meeting the requirements of ASTM C645 are acceptable studs subject to meeting specified requirements. EQ studs shall have a configuration and steel thickness such that the system in which they are implemented will carry the design transverse loads without exceeding either the allowable stress of the steel or the allowable design deflection.
1. Depth: As indicated.
  2. Deep-Leg Deflection Track: ASTM C 645 top runner with 2-inch- (50.8-mm-) deep flanges.
  3. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

- a. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).
4. Cold-Rolled Channel Bridging: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flange.
    - a. Clip Angle: 1-1/2 by 1-1/2 inch (38.1 by 38.1 mm), 0.068-inch- (1.73-mm-) thick, galvanized steel.
  5. Hat-Shaped, Rigid Furring Channels: ASTM C645.
    - a. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).
    - b. Depth: 7/8 inch (22.2 mm).
  6. Cold-Rolled Furring Channels: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flange.
    - a. Depth: 3/4 inch (19.1 mm).
    - b. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum bare steel thickness of 0.0312 inch (0.79 mm).
    - c. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.
- B. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
  - C. Steel Drill Screws: ASTM C 1002 "Standard Specifications for Steel Drill Screws for the Application of Gypsum Board", unless otherwise indicated.
  - D. Type W screws for attaching gypsum panel products to wood framing members.
  - E. Type S screws for attaching gypsum panel products to resilient furring channels.

## 2.2 RESILIENT FURRING

- A. Resilient Furring Channels: 1/2-inch- deep members, asymmetrical configuration, web leg segment perforated for more than 50 percent open area, designed to reduce sound transmission.
  1. Fire-rated Ceilings: Gypsum board over 1/2-inch deep metal resilient furring channel, use 1-inch long screws.
    - a. Spacing as required by UL assembly, but not more than 24 inches o.c.
  2. Basis of Design: Dietrich Industries "RC Deluxe", unless otherwise indicated on



Drawings.

### 2.3 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
  - 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, or paper-faced galvanized steel sheet.
  - 2. Shapes:
    - a. Corner bead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
- B. Control Joints: Install control joints at locations indicated on Drawings and according to ASTM C 840 and in specific locations approved by Architect for visual effect.
  - 1. Provide control joints in long expanses of partitions at minimum 30' intervals.
  - 2. Provide control joints at door jambs from door to ceiling, except where door jambs extend from floor to ceiling.
  - 3. Provide control joints where ceiling framing, or furring, changes direction.
  - 4. Provide control joints in ceiling to limit dimensions in either direction to 50 feet.
  - 5. Provide through wall control joints at fire rated walls. Provide joints meeting the approval of a nationally recognized testing laboratory.

### 2.4 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475.
- B. Joint Tape:
  - 1. Interior Gypsum Wallboard: Paper.
  - 2. Cementitious Backing Panels: Fiberglass mesh tape and jointing compound recommended by panel manufacturer.
- C. Joint Treatment Materials: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
- D. Interior Gypsum Wallboard: Paper, except use glass fiber mesh tape at cementitious backer boards.
- E. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
  2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
  3. Fill Coat: For second coat, use drying-type, all-purpose compound.
  4. Finish Coat: For third coat, use drying-type, all-purpose compound.
  5. Trim: Use taping compound type recommended by trim manufacturer for installing trim accessories. Follow trim manufacturer's recommendations for materials and installation methods.
- F. Fire/Smoke Sealant: Refer to Division 7 Section "Firestopping".
- G. Putty Pad Sealant: Control noise transmission and fire resistance at electrical boxes and other penetrations. Refer to Division 9 Section Acoustical Insulation and Sealants.

## 2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Fire-Resistance-Rated Assemblies: Comply with requirements of assembly.
1. Aluminum clip angles: 0.049-inch thick, 2 inches long with 2-inch by 2-1/2 inch legs, or as required by applicable UL design.
  2. Fasteners: Type W screws 1-1/4 inch long to wood framing through holes provided in clip.
  3. Refer to UL fire resistance directory for size, gauge, and spacing of clips at fire-rated assemblies.
- C. Thermal Insulation: As specified in Division 7 Section "Building Insulation."

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow- metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION - GENERAL



- A. Comply with Gypsum Association specification GA-216 "Application and Finishing of Gypsum Panel Products", 2007 edition, and ASTM C 840, 2008 edition.
- B. Where fire-resistant construction is indicated, construct gypsum board assemblies in accordance with specific requirements and stipulations given in the referenced fire-rated assemblies.
- C. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- F. Form control and expansion joints with space between edges of adjoining gypsum panels.
- G. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc., except in chases braced internally).
  - 1. Unless 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 in area.
  - 2. Fit gypsum panels around ducts, pipes, and conduits.
  - 3. 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- to 3/8-inch- wide joints to install sealant.

### 3.3 APPLYING AND FINISHING PANELS, GENERAL

- A. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.
- B. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.
- C. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

- E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints.
  - 1. Do not place tapered edges against cut edges or ends.
  - 2. Stagger vertical joints on opposite sides of partitions.
  - 3. Do not make joints between gypsum panels at corners of framed openings.
- F. Attach gypsum panels to framing provided at openings and cutouts.
- G. Form control and expansion joints with space between edges of adjoining gypsum panels.
- H. Cover both faces of stud partition framing with gypsum panels in concealed spaces, including above ceilings; except in chases braced internally.
  - 1. Unless 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 in area.
  - 2. Fit gypsum panels around ducts, pipes, and conduits.
- I. Wood Framing: Install gypsum panels over wood framing with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide- dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.
- J. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.
- K. Space fasteners in cementitious substrate panels a maximum of 6 inches on center.

### 3.4 PANEL APPLICATION

- A. Single-Layer Application:
  - 1. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible, and at right angles to framing, unless otherwise indicated.
  - 2. On partitions/walls, apply gypsum panels in a manner which minimizes the number of end-butt joints. unless otherwise indicated or required by fire- resistance-rated assembly, and minimize end joints. At high walls install boards horizontally, with end joints staggered over studs.
    - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
  - 3. Typical Interior Walls – single layer: use screws 1-1/4 inches long.



- a. Screw spacing not more than 16 inches o.c. where wall studs are spaced at 16 inches.
- b. Screw spacing not more than 12 inches o.c. where wall studs are spaced at 24 inches.
4. Typical Interior Ceilings Direct to Wood Framing – single layer: Screws 1-1/4 inches long.
  - a. Screw spacing not more than 12 inches o.c.
5. Typical Interior Ceilings to Resilient Furring – single layer fire-rated: Comply with UL design criteria.
  - a. Type S screws 1 inch long.
  - b. Screw spacing not more than 8 inches o.c.
6. Fire-rated Walls: Screw length as required by UL assembly, but not less than 1-7/8 inches.
  - a. Screw spacing as required by UL assembly, but not more than 7 inches o.c.
- B. Double Layer Installation: Install in configuration indicated on Drawings and a required to meet indicated performance requirement.
- C. Stair Well Walls: Space studs a maximum of 16 inch on center.

### 3.5 INSTALLING TRIM ACCESSORIES

- A. General: General: For trim with paper flanges, attach to wallboard using joint compound recommended by the trim manufacturer. Attach trim according to manufacturer's written instructions.
- B. Corner bead: Use at outside corners, unless otherwise indicated. Attach corner bead at not more than 8 inches apart.
- C. Interior Window Trim: Provide corner bead trim at gypsum board surrounding window as required to provide sharp, straight, reinforced edges at window perimeter.
- D. Control Joints: Install control joints [according to ASTM C 840 and as specified below
  1. Provide control joints in long expanses of partitions at minimum 30' intervals.
  2. Provide control joints at door jambs from door to ceiling, except where door jambs extend from floor to ceiling.
  3. Provide control joints where ceiling framing, or furring, changes direction.
  4. Provide control joints in ceiling to limit dimensions in either direction to 50 feet.

5. Provide through wall control joints at fire rated walls. Provide joints meeting the approval of a nationally recognized testing laboratory.

### 3.6 FINISHING GYPSUM BOARD ASSEMBLIES

- A. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:
  1. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at panel surfaces that will be exposed to view, unless otherwise indicated on Drawings.
  2. **Level 5: Where there is visible telegraphing of tape or fasteners after applying Level 4 finish, installer will be required to apply Level 5, skim coat finish.**
- B. Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces as for decoration. Promptly remove residual joint compound from adjacent surfaces.
- C. Pre-fill open joints, rounded or beveled edges, and damaged surface areas.
- D. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

**END OF SECTION 09 29 00**



**Exhibit E**

**PAINT COLORS**

**Exhibit E**

**PAINT COLORS**



**DRYWALL COLOR**

BENJAMIN MOORE, COSTAL FOG MATTE FINISH AC-1

**TRIM AND DOOR COLOR**

BENJAMIN MOORE, SAPPHIRE WHITE

**Exhibit F**

**NON ROUTINE MAINTENANCE WAGE RATES**



<b>Maintenance Wage Rate Determination</b>	<b>U.S. Department of Housing and Urban Development Office of Labor Relations</b>	<b>HUD FORM 52158 (04/2005)</b>
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Agency Name:  <b>MEMPHIS HOUSING AUTHORITY</b>	LR 2000 Agency ID No: <b>TN055A</b>	Wage Decision Type: <input type="checkbox"/> Routine Maintenance <input checked="" type="checkbox"/> Nonroutine Maintenance
	Effective Date: <b>JULY 01, 2018</b>	Expiration Date: <b>JUNE 30, 2020</b>

The following wage rate determination is made pursuant to Section 12(a) of the U.S. Housing Act of 1937, as amended, (public housing agencies), or pursuant to Section 104(b) of the Native American Housing Assistance and Self-determination Act of 1996, as amended, (Indian housing agencies). The agency and its contractors may pay to maintenance laborers and mechanics no less than the wage rate(s) indicated for the type of work they actually perform.

<b>Alfreida S. Doe</b> <b>Contract Industrial Relations Specialist</b> HUD Labor Relations (Name, Title, Signature)	<b>August 30, 2018</b> Date
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WORK CLASSIFICATION(S)	HOURLY WAGE RATES	
	BASIC WAGE	FRINGE BENEFIT(S) (if any)
Electrician	23.79	
Carpenter	17.00	
Plumber	20.97	
Laborer (Non-Skilled)	10.92	
Power Equipment Operator (Semi-skilled)	14.60	
Truck Driver (Semi-skilled)	13.07	
Painter (Skilled)	15.37	
Roofer (Semi-skilled)	14.60	
Cement Mason	15.37	
Concrete Finisher	15.37	
Sheet Metal Worker	20.02	
HVAC Duct (Skilled)	20.02	
		<input type="checkbox"/> The agency employee benefit program has been determined by HUD to be acceptable for meeting the prevailing fringe benefit requirements.  <small>(HUD Labor Relations: If applicable, check box and initial below.)</small>  _____ LR Staff Initial

	<b>FOR HUD USE ONLY</b> <b>LR2000:</b>  <b>Log in:   IAM-0022</b> <b>Log out:   OAM-105</b>
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<u>CLASSIFICATION (Skilled)</u>	<u>Wage Rate</u>
ELECTRICIAN	\$23.79
CARPENTER	\$17
PLUMBER	\$20.97
<u>LABORERS (non-skilled)</u>	\$10.92
COMMON/GENERAL	
LANDSCAPE	
FLAGGER	
PIPELAYER	
MASON TENDER/BRICK	
ROOF TEAROFF	
<u>POWER EQUIPMENT</u>	
<u>OPERATOR (Semi-Skilled)</u>	\$14.60
BACKHOE/TRACKHOE	
BULLDOZER	
ASPHALT PAVER	
BOBCAT/ROLLER	
ASPHALT	
BOBCAT/SKID	
LOADER	
FORKLIFT	
<u>TRUCK DRIVER (Semi-Skilled)</u>	\$13.07
DUMP TRUCK	
MATERIAL TRUCK	
PICK UP TRUCK	
<u>PAINTER (Skilled)</u>	\$15.37
<u>ROOFER (Semi-Skilled)</u>	\$14.60
<u>CEMENT MASON/</u>	\$15.37



(Skilled)	
CONCRETE FINISHER (Skilled)	\$15.37
SHEET METAL WORKER (Skilled)	\$20.02
HVAC DUCT (Skilled)	\$20.02