

## **Part 1 General**

### **1.1 SUMMARY**

- .1 The following section of the specifications is an integral part of the contractual documents and must be interpreted alongside the other sections of the procedures.
- .2 Respect all requirements in this section of the specifications during the execution of the work detailed below.
  - .1 The removal of sections of wood pieces that are part of the roof structure which are damaged by water infiltration or that are contaminated by mould. This work is mostly concentrated in the areas around the chimneys, but interventions are also required elsewhere in the attic (see the scope of work indicated on the architecture and structure plans). Consider all removed elements as mould-contaminated.
- .3 Work must be performed according to Level II work procedures as required by the Mould Guidelines for the Canadian Construction Industry (CCA, 82-2004) published by the Canadian construction Association and according to the following section of the specifications.

### **1.2 RELATED REQUIREMENTS**

- .1 The Contractor must coordinate the removal of all the wood piece sections that are part of the roof structure with the removal of the panels and the asbestos cement debris in asbestos work conditions as described in section 02 82 00.01 (Asbestos Abatement – Minimal Precautions), as well as with the disassembly work of the stone facing, masonry filling and brick chimneys, under lead conditions, as described in sections 02 83 10 (Lead Abatement – Minimal Precautions) and 02 83 12 (Lead Abatement – Maximum Precautions).
- .2 The Contractor must implement appropriate work measures in order to prevent the dispersion of dust, of mould spores and debris emanating from other work areas (local exhaust ventilation, protection of the floor, regular cleaning with a HEPA vacuum and/or a damp cloth, etc.)
- .3 The Contractor must submit, for approval by the Departmental Representative, the sequence and the work methods that they intend to follow as well as a detailed timetable for the completion of all the mould work. These documents are mandatory in order to obtain authorization to start the work.
- .4 The Contractor must wait for the Departmental Representative's authorization before the start of work under mould conditions.
- .5 Once work has begun in a designated zone, the work must continue until it has been completed.
- .6 The Contractor must repair all damaged surfaces and replace the material or damaged equipment to the complete satisfaction of the Departmental Representative, in the case where the damage is a result of the work that was executed by the Contractor.

- .7 All waste contaminated by mould must be disposed of daily in a suitable container and transported to the transport container which is reserved for this purpose. Place the waste containers in an area designated by the Departmental Representative. Keep the containers secured, closed off and sealed during its time on site of the former officers' quarters. The loading area must remain clean at all times. The location of each container will be specified at the first on site meeting by the Departmental Representative.
- .8 The Contractor must provide extra lighting, when needed.
- .9 The Contractor shall bear all costs related to the temporary storage, the handling, the transportation and the disposal of asbestos waste.

### **1.3 REFERENCES**

- .1 Department of Justice Canada
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Workplace Health and Safety Act (1979) (LSST) (L.R.Q., c.S-2.1)
  - .1 Workplace Health and Safety Regulation (C S-2.1, r.13);
  - .2 Construction Safety Code (C S-2.1, r.4).
- .3 Commission de la Santé et de la sécurité au travail (CSST).
- .4 Health Canada
  - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .5 American Conference of Governmental Industrial Hygienists (ACGIH), Bioaerosols Assessment and Control, 1999.
- .6 Canadian Construction Association, Mould Guidelines for the Canadian Construction Industry, 2004 (CCA 82-2004).
- .7 Bureau of Environmental and Occupational Disease Epidemiology, New York City Department of Health, Guidelines on Assessment and Remediation of Fungi in Indoor Environments, 2000.
- .8 United States Department of Labor Occupational Safety and Health Administration (OSHA)
  - .1 29 CFR 1910.134 - Respiratory Protection.
  - .2 29 CFR 1910.1200 - Hazard Communication.

### **1.4 DEFINITIONS**

- .1 Materials contaminated by mould: all materials affected by water infiltrations or visible mould.
- .2 Occupied Area: areas of building or work site that is outside mould contaminated work area.
- .3 Contaminated work area: specific area or location where actual work is being performed or other areas of facility where it has been determined that it may be hazardous to public health as result of mould remediation.

- .4 Competent worker: in the case of a specific work, is designated as:
  - .1 A worker, who because of his knowledge, training and experience, is qualified to perform the work
  - .2 A worker who is familiar with federal and provincial laws and with the provisions of the regulations that applies on the work.
- .5 Contractor: contractor who is responsible for the execution of the mould remediation work as indicated in the current section of the specifications.
- .6 Authorized Visitors: Departmental Representative, and Representatives of all competent regulation agencies.
- .7 Departmental Representative: project manager who is responsible for the monitoring of all work or of his Representative, which includes the consultant who is responsible for the preparation of the mould remediation work, lead abatement and asbestos abatement documents as well as the monitoring of the work described in the current specifications.
- .8 Fibre Reinforced Polyethylene Sheet: rip-proof fibre reinforced polyethylene sheeting with added fibre reinforced adhesive tape along edges.
- .9 PPE: Personnel Protection Equipment.

## **1.5 REGULATORY REQUIREMENTS**

- .1 Comply with regulations in effect at time work is performed. In case of conflict among these requirements or with these specifications the more stringent requirement applies. If no regulations exist, follow guidelines most widely accepted by recognized professional organizations such as occupational hygienists, health professionals or environmental engineers as listed in paragraph 1.2 References.

## **1.6 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Respect the following instructions before starting the work:
  - .1 Submit documents to the satisfaction of the Departmental Representative proving that all workers have received training and an adequate education concerning the risks related to mould exposure, personal hygiene, appropriate methods and measures to adhere to when working in a mould contaminated area, the use, cleaning and elimination of respiratory equipment and protective clothing.
  - .2 Submit to the Departmental Representative for his approval, during the kick-off meeting, the sequence and the work methods that must be followed as well as a detailed work calendar for the work planned in the current section of the specifications.
  - .3 Submit to the Departmental Representative for his approval, the waste evacuation method. This method must be controlled and controllable.
  - .4 Submit a notice of the opening of an at risk project involving the manipulation of mould contaminated materials as well as a prevention program to the CSST.
  - .5 Submit the documents proving that the Contractor has a liability insurance covering all mould work.

## **1.7 INSTRUCTION AND TRAINING**

- .1 Before starting work, provide the Departmental Representative proof that workers have had instruction and training in potential health hazards of mould exposure, handling of mould contaminated materials, in personal hygiene measures and appropriate work methods as well as appropriate use, cleaning and elimination of respirators and protective clothing.
- .2 Instruction and training related to respirators includes at minimum:
  - .1 Fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Characteristics of respirators and limitations of equipment.
- .3 Instruction and training must be provided by designated mould remediation safety advisor.
- .4 All individuals charged with the monitoring must also follow pertinent training.

## **1.8 WORKER PROTECTION**

- .1 Personal protective equipment, which every worker must use when entering the contaminated work area must include the following:
  - .1 Half-face respirator equipped with a HEPA filter, personally issued to the worker and marked as to its efficiency and its purpose, ensuring adequate protection against mould spores and acceptable with regards to competent provincial agencies. The respirator must ensure airtight contact on the worker's face unless the worker is wearing a hood or a hard hat. The respirator must be cleaned, disinfected and inspected after each work shift or more frequently if needed, when it is issued for one worker's use or after each usage when it is used by more than one worker. Each piece of a respirator which is damaged or deteriorated must be replaced before the equipment is used by a worker. When a respirator is not used, it must be stored in a clean, practical and sanitary area. The worker must establish procedures concerning a respirator's choice, use, and maintenance. A copy of these procedures must be submitted and explained to each worker that must wear a respirator. No worker must be assigned to a task which requires the use of a respirator if the worker does not have the physical capacity to execute the task while wearing a respirator.
  - .2 Disposable protective clothing. Protective clothing must be furnished by the Contractor and worn by each worker who enters the work area. This clothing must include a full suit with a hood and cuffs which ensure a tight fit on the wrists, ankles and neck, in order to prevent mould spores from reaching clothing and skin underneath protective clothing, as well as suitable shoes. Torn protective clothing must be repaired or replaced.
  - .3 Gloves and eye protection.
- .2 Requirements for workers on entering and exiting the work area:
  - .1 Each worker must remove street clothes in the clean change room and wear personal protective equipment before entering the decontamination airlock. Street

clothes, shoes, towels and other non-contaminated similar articles must be placed in the clean change room.

- .2 Before leaving the contaminated work area, the worker must remove all contaminated material deposits from his clothing (dust and mould spores) and then go to the decontamination airlock and remove all his clothing. Work clothing as well as all contaminated materials and equipment must be placed in the containers provided for this purpose. All equipment and materials which are reusable, with the exception of respirators, must be left in the decontamination airlock.
- .3 Ensure that the mask of the respirators, which are used by the workers, is adequately sealed and not compromised by hair or facial hair.
- .4 Eating, drinking and chewing are not permitted in Mould Contaminated Work Area.
- .5 Ensure workers wash hands and face when leaving work area. The location of facilities for washing will be designated during the first worksite meeting.
- .6 Ensure workers wash hands and face after leaving Mould Contaminated Work Area.

## **1.9 VISITOR PROTECTION**

- .1 Protective clothing and approved respirators to be worn by Authorized Visitors who must enter the Mould Contaminated Work Area.
- .2 Instruct Authorized Visitors in use of protective clothing, respirators, and procedures.
- .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from the Mould Contaminated Work area.

## **1.10 WASTE MANAGEMENT AND DISPOSAL**

- .1 Unless otherwise stated, all material that must be removed becomes the property of the Contractor who is required to remove these materials in accordance to all established regulations and directives.
- .2 Remove all mould contaminated waste in doubled and sealed 0.15 mm thick bags or in airtight containers or drums.
- .3 The disposal of waste and mould contaminated materials is not subject to any particular provision; this waste can be sent to a landfill.

## **Part 2 Products**

### **2.1 MATERIALS, TOOLS AND EQUIPMENT**

- .1 Warning tape: yellow tape and marked «Danger» in order to delineate the contaminated work area.
- .2 Drop Sheets:
  - .1 Polyethylene sheets: sheet of at least 0.15 mm thickness, large enough for there to be as few seams as possible.

- .2 Fibre reinforced polyethylene sheets: woven fibre reinforced fabric bonded both sides with polyethylene, 0.15mm thickness.
- .3 Disposal bags: dust-tight 0.15 mm clear polyethylene waste bags.
- .4 Cleaning product: detergent solution used for cleaning contaminated surfaces with a wet cloth and/or a mop or a brush.
- .5 Fibre reinforced adhesive tape: used in sealing joints of fibre reinforced polyethylene sheets and for attachment of fibre reinforced polyethylene sheet to finished and unfinished surfaces. Fibre reinforced adhesive tape must be capable of adhering under both dry and wet conditions.
- .6 Warning signs: printed sign indicating, in both official languages, removal work of mould contaminated materials. This sign must be yellow, measure 500 mm in height, 350 mm of width and indicate, via black characters with the dimensions specified below and the following information:

	Character dimensions
WARNING – MOULD EXPOSURE RISK	25 mm
AUTHORIZED PERSONNEL ONLY	19 mm
PROTECTIVE EQUIPMENT IS MANDATORY	19 mm
INHALATION OF MOLD CAN BE VERY HARMFUL TO HEALTH	7 mm
- .7 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. The capacity of the sprayer must be adapted to the work that must be performed.
- .8 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining particles greater than 0.3 microns in any direction at 99.97% efficiency.
- .9 Materials: provide materials such as fibre reinforced polyethylene sheeting, lumber, nails and hardware necessary to construct and dismantling barriers that isolate Mould Contaminated Work Area.
- .10 Tools and equipment: suitable for use with microbial contamination and must be able to withstand decontamination.
- .11 Without being limited to, include all personal protective equipment described in article 1.8.
- .12 All equipment which is necessary for the execution of the work described in the current specifications.

## **Part 3            Execution**

### **3.1                PREPARATION**

- .1        Comply with construction occupational health and safety requirements of federal, provincial, territorial and municipal agencies as well as the general terms and conditions of the project.
- .2        During the site installations inside the attic, the workers must wear all individual protective equipment that are listed in section 1.8 of the current section of the specifications.
- .3        Contaminated work areas in the attic, around the chimneys:
  - .1        Completely delineate the work areas from the other sectors in the attic with enclosures made with reinforced polyethylene sheets in order to confine dust, mould spores and debris in the contaminated work areas. Use reinforced polyethylene sheets to cover the floor of each contaminated area in order to collect the debris generated by the removal of the contaminated wood pieces and in order to facilitate the final cleaning activities in the work areas.
  - .2        Set up a decontamination enclosure for the workers with a decontamination airlock, a clean change room and a decontamination zone for the containers and equipment. These facilities can be set up in the areas available to the Contractor.
  - .3        Install warning signs at the work zone access points.
- .4        Contaminated work areas in the attic, other than those around the chimneys:
  - .1        Clearly delineate work areas by locating all possible ways which can give access to the work areas with warning signs and warning tape.
  - .2        In each work area, set up a floor made of reinforced polyethylene sheets in order to collect debris generated by the removal of mould contaminated materials and to facilitate the final cleaning of the work area.
  - .3        Use the decontamination enclosures for the workers and the containers and equipment indicated in article 3.1.2.2 – Preparation, in the current section of the specifications.
- .5        After setting up the work areas and the decontamination enclosures, proceed with the removal of mould contaminated materials as specified in the current section of the specifications as well as in the Architect and the Structural Engineer's documents. Afterwards, remove all contaminated waste from the work areas, and eliminate them as planned.
- .6        Enclosure maintenance :
  - .1        Keep the enclosures clean and in good condition.
  - .2        Ensure that a visual inspection of the enclosures is done at the start of each work shift. Make the necessary repairs, as needed.
- .7        All work must not start before:
  - .1        The provisions relating to waste disposal have been taken.
  - .2        Tools, equipment, materials and waste containers are on site.
  - .3        Arrangements have been made to preserve the building's security.

- .4 Adequate proof that all workers have received adequate training in accordance to the Health and Safety at work Act.
- .5 That all notices have been issued and that proof has been made available to the Departmental Representative.
- .6 That the warning signs have been installed at the access points of the removal zones of mould contaminated materials.
- .7 That the Departmental Representative has been notified that the work is about to start and that it has been verified that all work areas, equipment and working methods have been accepted by the CSST.

### **3.2 WORK MONITORING**

- .1 At least 1 supervisor must be designated for each group of ten (10) trained workers.
- .2 An authorized supervisor must, at all times, remain on site during any activity related to removal or any other handling of mould contaminated materials in order to ensure that the provisions described in the current section of the specifications are met.

### **3.3 WORKING PROCEDURES**

- .1 Organize and set up the site.
- .2 Remove, in small segments, the wood pieces that are part of the roof structure that are damaged by water or contaminated by mould according to the scope of work indicated in the architecture and structure plans. Use a fine mist sprayer at a low flow rate to humidify (without soaking) the contaminated materials that must be removed. Perform the work so as to minimize, as much as possible, the creation of dust.
- .3 Place the removed materials in sealable bags, made of plastic with a thickness of at least 0.15mm, as the work progresses.
- .4 Regularly dispose of the waste bags during the work in the waste container in order to avoid any accumulation in the work area.
- .5 Cleaning:
  - .1 During the work and upon completion of all the work, clean the work area with a HEPA Vacuum and with wet cloths and detergent;
  - .2 Dispose of dust and mould contaminated waste in waste bags that can be sealed airtight.
  - .3 Clean each bag that contains waste with damp cloths or with a HEPA Vacuum immediately after its removal from the contaminated area and place it in a second non-contaminated waste bag.
- .6 Once the removal work of the mould contaminated materials is completed, proceed with a final cleaning of the work area:
  - .1 Clean the entire work area as well as the used equipment with a HEPA Vacuum and a wet cloth and detergent. Ensure that the Departmental Representative inspects and approves the work.
  - .2 All work will be subject to a visual inspection by the Departmental Representative. If the visual inspection reveals that adjacent areas are



contaminated, these areas must be confined and thoroughly cleaned at no extra cost.

- .7 Proceed with the dismantling of the site installations only once the final cleaning/inspection activities are finished and approved by the Departmental Representative (see article 3.4- Acceptance of Work, for more details)

### **3.4 ACCEPTANCE OF WORK**

- .1 Quality control of the work done in mould conditions will be conducted by the Departmental Representative who will perform a final visual inspection of the work areas:
  - .1 The final inspection must show that all contaminated materials were removed and that no dust or debris are present in the work areas.
  - .2 If the Departmental Representative judges that the results of their visual inspection are not acceptable, the Contractor must reclean, with no additional costs.
  - .3 Repeat this procedure until the conditions indicated in article 3.4.1.1 of the section of the specifications have been reached.

**END OF SECTION**