AXA XL Insurance

Environmental

Water intrusion management plan

A plan template for construction firms

Template

Appendix

Disclaimer: AXA XL provides these guidelines as a template for the development of your firm's company-specific Water Intrusion Management Plan. This information should be reviewed in its entirety and tailored as appropriate to each company's needs and operations. Items in bold italics should be revised to address company specific criteria. Items in the shaded discussion boxes should be addressed in each section and necessary details should be provided.

XYZ Company water intrusion management plan

1.0 Policy

This program addresses the prevention, management, and response to water intrusion events and potential mold growth. It is important to note that this is a basic outline to respond to water intrusion events. Each water intrusion event has different characteristics. Although this guidance document can be used as a tool, each event needs to be assessed on an individual basis. To effectively implement this program, the following components are considered within each section of the plan:

- Purpose - Why these steps are taken
- Process - The actions that will be taken and how they will be implemented
- Payoff - The value to the organization for taking these steps

Mold is a significant concern in North America as its presence in structures has the potential to result in both property damage and personal injury. It is the policy of ***XYZ Company*** to take reasonable steps to prevent water intrusion events, to respond to water intrusion events in a timely and effective manner and thus to minimize the potential for mold growth. This plan outlines the procedures that are followed during ***new construction, renovation, and maintenance activities*** to minimize the potential for water intrusion and to respond to water intrusion and/or mold growth when it occurs. By training employees, putting controls in place, and reporting and documenting incidents, project exposures associated with water intrusion are reduced.

Discuss the following:

- Why is it important to the company that water intrusion and mold growth be controlled at project sites?
- What are the financial, legal, and reputational exposures to the company if this plan is not effectively implemented?
- Why is it necessary to have a written plan and documentation to demonstrate the company's standard of care?

2.0 Responsibilities

XYZ Company is accountable for the enforcement of the plan. While senior management is ultimately responsible, all personnel involved in company operations have a responsibility to be familiar with and comply with the provisions of this plan. Compliance with the provisions shall be enforced by the ***project site manager*** and the ***XYZ Company*** management chain-of-command. It is the responsibility of all site personnel to report observed water intrusion and mold growth to the project site's ***supervisory personnel*** upon discovery. Site personnel will also report site or design issues that have the potential to cause water intrusion if left uncorrected.

Mr. /Ms. Doe has/have been designated as ***XYZ Company's*** responsible person(s) for overseeing the implementation of this Water Intrusion Management Plan. Specific comments and questions are to be directed to them.

Discuss the following:

- Who is responsible for what with regard to water intrusion events?
- Identify responsibilities at various levels
- Identify the roles of the project team members

3.0 Training

Project personnel are trained on these responsibilities and how field operations impact the prevention, management and response to water intrusion events.

Discuss the following:

- Training topics
- Frequency of training
- What training is required for various groups?
- Documentation of training

4.0 Water intrusion control during project life cycle

Control of water intrusion begins at the project pre-construction phase, during subcontractor selection and in the use of protective contract language. It continues during field operations and is completed during project close-out and the warranty period.

Discuss the following:

- Areas of operations which pose higher exposures to water intrusion such as GC/CM, HVAC, mechanical, plumbing, roofing, landscaping, window installation, and building envelope
- Higher exposure project types: residential, hospitals, hotels, schools, and renovations
- In higher risk project types and services, steps to modify performance and oversight to incorporate additional risk management procedures

4.1 Pre-construction phase

XYZ Company verifies that the following elements, which are part of our bid package and scope of work, are evaluated upon review of the construction specifications prior to commencing site operations. This is the responsibility of the ***XYZ Company*** project managers or their designees and is performed as part of the pre-assessment constructability review.

(Edit or expand the following list to address project or corporate scope of work.)

- Pre-site analysis
- Discovery during renovations
- Drainage away from foundations
- Roofing intersection details
- Window and door flashing
- Roof and wall penetrations
- Building envelope drainage systems
- Vapor barriers and wall cavity drainage provisions
- Ventilation of enclosed spaces that may contain moisture
- Exterior waterproofing and foundation drainage
- HVAC systems, including condensate collection and drainage
- Mechanical systems
- Exterior venting of moisture producing areas and equipment (i.e., bathrooms, kitchens, indoor pools, locker rooms, laundries)
- Vapor barriers
- Sump pump installation (primary and optional battery back-up)
- Rain gutters and downspouts
- Utility and site drainage systems

- Septic systems
- Landscaping and irrigation systems
- Monitoring systems for relative humidity and temperature at selected locations throughout the building
- Potential for third party impact

Ensure any discrepancies or concerns with the design are brought to the attention of the appropriate external and internal team members for discussion and possible corrective action. Ensure these communications with the designated team, especially if a valid concern is not addressed, are documented. This documentation must be retained in the project file.

Subcontractors
When ***XYZ Company*** hires subcontractors, their activities may result in a water intrusion event. Prior to the start of field operations, ***XYZ Company*** instructs their subcontractors that they are responsible to identify and report to project superintendent any water intrusion event they become aware of during the course of operations regardless of fault.

Discuss the following:

- Describe subcontractor evaluation procedures such as written program requirements for higher risk subcontracted services, such as EIFS, roofing, window installation, sprinkler, and HVAC
- Describe insurance requirements for higher risk subcontractors
- List any training on water intrusion and mold management that is provided to subcontractors and how it is documented

Contractual Provisions
A review of each contract is performed by ***XYZ Company*** senior management to address overall project liabilities and responsibilities. As part of this review, terms and conditions that relate to the handling and/or discovery of a water intrusion event or mold at a project site are evaluated. ***XYZ Company*** accepts responsibility for remedying site conditions which were under ***XYZ Company*** control that may have led to the generation of mold. It is ***XYZ Company's*** intent to enter into contracts that limit their responsibility for conditions beyond their control. Identified water intrusion or mold concerns or conditions must be addressed prior to contract approval. In the event that pre-existing mold is discovered at a project site, ***XYZ Company*** is responsible only to notify the owner and/or the Construction Manager. Appropriate documentation of this communication, as well as the determined course of action, is retained in the project file.

4.2 Construction phase

XYZ Company ensures that site operations are performed in a way that minimizes the potential for water damaged materials to be utilized for the project. The following are steps that are taken to minimize the potential for water intrusion:

(Edit or expand the following list to address XYZ Company scope of work.)

- Deliveries are sequenced to avoid the storage of large amounts of moisture sensitive material at the site for an extended time period
- Building materials are inspected upon delivery and significantly mold impacted materials are rejected
- Moisture sensitive materials are protected from weather elements during delivery and off-loading activities
- Stored building materials are elevated and covered to protect them from weather elements
- Interior partitions are inspected for moisture and mold prior to being permanently enclosed
- Building penetrations are sealed at the end of the work day to avoid moisture infiltration
- Roof and building envelopes are substantially completed before any porous materials are stored in the building
- Wet porous building materials are dried and inspected for mold growth prior to installation
- Moisture limiting design features, such as roofing, flashing, windows, doors, exterior waterproofing and building envelope components are properly installed according to manufacturer's specifications
- Site workers practice good housekeeping
- Site workers are responsible for reporting any unwanted accumulation of water to site management
- Sub-floors are cleaned and dried prior to carpet installation
- Construction debris is removed from within HVAC systems and associated ductwork
- Existing duct work that is to remain in place during renovation activities is sealed with polyethylene sheeting and tape to prevent dust and debris from entering
- HVAC condensate collection and drainage systems are checked to ensure that they are functioning properly
- Regular inspections are performed and documented during construction to identify leaks, ponded water and/or sources of water entry
- Moisture/water leaks are responded to within 24 to 48 hours of discovery
- Good communication is maintained between general contractor and other site contractors to remind them of this program and to discuss any water intrusion/mold issues
- HVAC, plumbing and mechanical systems are tested before enclosure

XYZ Company conducts site inspections to ensure that the water intrusion minimization steps are implemented in a complete, consistent, and comprehensive manner. ***XYZ Company*** maintains copies of their documentation in the project file.

Discuss the following

- How are inspections performed (when, by whom, and how documented)?
- A Guideline for Water Intrusion Event Documentation is provided as Appendix 1

4.3 Project close-out and warranty period

At project conclusion ***XYZ Company*** performs a final inspection with the client. As part of this walk-through, ***XYZ Company*** should document that their site activities have not resulted in a moisture/water intrusion event. If a moisture/water intrusion event has occurred, ***XYZ Company*** provides the client with documentation of the corrective action which was taken, including photographs.

Maintenance and operations by others at the site may affect the potential for future mold growth. At the conclusion of site operations, ***XYZ Company*** provides the building owner(s) an information packet that includes all manufacturer warranties, equipment manuals and appropriate operation and maintenance instructions. As part of the turn-over process, ***XYZ Company*** requests that the owner sign an acknowledgement form indicating the receipt of the materials provided to them. A copy of the signed form is maintained in the project file. A sample acknowledgement form is provided as Appendix 2. "Tips for Mold Prevention in Structures" is provided as Appendix 3.

Many projects include a year-long warranty program. ***XYZ Company*** should ensure that during this period, if issues of water intrusion or mold growth are reported by the owner/tenant, that the concerns are addressed immediately.

5.0 Procedures for responding to water intrusion

These procedures are designed to respond to water intrusion generated as a result of clean water and not contaminated water (i.e. sewage). In the event moisture/water enters the structure during the construction phase (e.g. roof leak, pipe leak, weather-related flooding), the emphasis must shift to removing the moisture/water, halting the source of the moisture/water, and drying any impacted materials. In some instances, impacted porous materials may need to be removed and replaced. **Response activities must commence immediately (within 24 to 48 hours) following the moisture/water event or upon discovery of the moisture/water damage.** Field personnel should notify internal management of the moisture/water intrusion event as soon as possible.

In the event that a moisture/water intrusion event is suspected to involve contaminated water, an appropriate specialty contractor should be contacted.

If moisture/water intrusion response is not conducted promptly, mold growth may develop. The following actions shall be taken within 24 to 48 hours for handling objects and construction materials that have come into contact with clean moisture/water:

1. **Identify and eliminate the moisture/water source.**

2. **Wet vacuum**
   Wet vacuums are designed to collect water. They can be used to remove accumulated water from floors, carpets, and other hard surfaces. They are less effective for removing water from dense porous materials such as gypsum board.

   Wet vacuums may spread mold spores if sufficient liquid is not present. The tanks, hoses and attachments of these vacuums should be thoroughly cleaned and dried after use because mold and mold spores may stick to the equipment surfaces.

3. **Drying and ventilation**
   Materials that come into contact with water must be dried prior to being installed or covered with additional material. There are several methods used to assist in drying wet materials. Large blowers with directional controls or heaters assist in the drying process.

   Forced ventilation should be vented directly outside. Avoid combustion type heaters for drying purposes as oxygen levels are decreased, the exhaust requires outside ventilation, and moisture is generated as a by-product of incomplete combustion. Ensure impacted area is dry before proceeding with repairs.

4. **Material disposal**
   Damaged materials that are not salvageable, must be disposed. These materials are doubled-bagged using 6-mil polyethylene bags and discarded as construction waste.

   It is important to package mold-contaminated materials in sealed bags before removal from the contaminated area to minimize the dispersion of mold spores. Large items that have heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before they are removed from the containment area.

   Note: Guidelines for evaluating damaged materials should be provided to site personnel to assist them in determining if materials should be discarded or reused.

6.0 Procedures for responding to mold growth

XYZ Company's response to mold growth is based upon the US EPA, OSHA and/or NYC guidance documents addressing water intrusion and mold.

www.OSHA.gov

www.epa.gov/iaq/molds

www.NYC.gov

Discuss the following:

- ***XYZ Company*** response to mold growth
- Level of cleanup performed by ***XYZ Company*** personnel
- Selection and use of remediation firms

Both during construction and post-construction, ***XYZ Company*** will respond to complaints of water intrusion or mold growth in a timely manner.

7.0 Communication and documentation procedures

Throughout the phases of a project it is essential that communication with internal and external personnel are implemented and documented. ***XYZ Company*** must determine and ensure that the appropriate levels of communication and documentation are maintained throughout the project to ensure that all parties involved understand the risk.

Discuss the following:

- Determine the appropriate communication and documentation tools such as notification forms for internal and external communication, and responsibilities for client contact

Appendix 1

Guidelines for water intrusion event documentation

(Edit guidance and create/insert a Water Intrusion or Mold Event Documentation Form as part of Appendix 1.)

This is a guidance document only and must be tailored to your firm's operations as well as modified on a case-by-case basis. This document is not designed to be all inclusive. Below is an outline of actions that should be taken when responding to a water intrusion or discovery of mold event. The key is to appropriately determine the significance of the event and ultimately the appropriate response, notification, and documentation required. This approach should include the following steps:

- Identification of a water or mold concern on a project; examples include unwanted water accumulation, water-impacted materials, visible mold growth, material staining, and musty odors
- Notification of internal company management responsible for the project by field personnel to communicate concern
- Direction from corporate management such as, but not limited to:
  - the continuation of work
  - the stoppage of work
  - notification of project owner and construction manager
  - completion of appropriate documentation
  - formal letter to project owner and architect

In order to document a water intrusion or mold growth event, consider the following list of items that may be included in such a form. This list is generic in nature and is not to be perceived as inclusive; it is designed only to provide guidance.

- Job site
- Site address
- Client contact
- Today's date
- Location of incident (description and/or description with diagram)
- Owner/client verification of location (i.e., how you may reference an area may not be how the owner/client does)
- Description of moisture event
- Date and time of observation of occurrence
- Date and time action initiated
- Describe materials affected
- Square footage affected
- HVAC evaluation
- Owner, construction manager, building occupant notification
- Actions taken (water source controlled, owner notification only, self-performed cleanup, remediation, retain CIH, remediation firm, etc.)
- Equipment used
- Photographs should include date and location description
- Follow-up actions
- Re-inspection (date, results, methods of verification)
- Comments

When appropriate, a copy of the completed form should be provided to owner/client and when possible have the owner/client sign the document. The original document is retained in the project records.

A disclaimer based on the firm's level of action should be included on the form. This disclaimer should be reviewed with local legal counsel familiar with your firm's operations and that of the industry in the geographic region where services are rendered prior to inclusion in any written correspondence.

Appendix 2

Building/project turn over notification form

It is ***XYZ Company 's*** goal to fabricate high quality structures for our customers. During construction, we take a variety of precautions to reduce the likelihood that mold growth will occur in the structure. Since molds and their reproductive bodies, called spores, are all around us as a normal component of the environment, it is virtually impossible to completely exclude these organisms from the structure.

While the presence of low concentrations of these organisms does not represent a concern in most cases, increased mold growth can occur following the wetting of building materials such as lumber, carpet, drywall, and ceiling tiles. Some sources of moisture that could feed problematic mold growth include high humidity (such as in bathrooms or kitchen facilities), poor housekeeping, open windows when it is raining, flooding, sewer back-ups, and leaking roofs/plumbing. Elevated concentrations of mold and their spores inside structures can potentially cause damage to building materials and adversely affect the health of occupants.

As the building owner, you have a responsibility to take reasonable actions to prevent mold from becoming a problem in your property. Failure to control moisture leading to excessive mold growth could affect or invalidate any warranties or insurance coverage you may have on the property.

To assist you with this responsibility, ***XYZ Company*** is providing some guidelines for preventing mold growth in occupied structures.

The client/owner herein acknowledges that they are responsible for the proper operation and maintenance of the structure and the internal systems that have been constructed, installed, upgraded, designed, serviced, cleaned, modified, altered, and/or repaired by the Company pursuant to written agreement with the client/owner. Client/owner will indemnify the Company for any claims, including but not limited to mold or fungi claims, arising from or related to the owner's/client's maintenance, operation, modification, alteration and/or changes made to the structure and internal system without the involvement of the Company.

I hereby certify that I have read and understood the information contained in this Mold Prevention in Structures - Building Owner Notification Form.

Owner Name: _____

Owner Signature: _____ Date: _____

Information Provided By: Contractor: _____

Contractor Rep. Name: _____

Signature: _____ Date: _____

(Copy to Building Owner, Original to Project File)

This document does not constitute a guarantee, a warranty, advice or a representation of any kind and is provided for informational purposes only.

Appendix 3

Tips for mold prevention in structures

Remember – Control moisture and you limit mold growth!!!

- Respond to any water intrusions within 24 to 48 hours. Focus on removing any freestanding water and thoroughly drying out impacted materials.
- Repair water or sewer leaks as soon as possible to avoid the leak worsening and increased water damage.
- Use air conditioning in hot/humid weather. Hot, moist air is very conducive to mold and mildew growth.
- Keep Heating, Ventilation, and Air-conditioning (HVAC) system drip pans clean and unobstructed so that condensate can flow freely. Follow the manufacturer's recommendations for proper HVAC system operation and maintenance.
- Perform regular building inspections.
- Vent dryers, range hoods, and other moisture-generating appliances to the outside.
- Maintain optimum humidity levels between 30 and 50%.
- Keep houseplants to a reasonable number.
- Avoid the installation of fountains and other water features.
- Do not store wet mops and cleaning supplies in dark, unventilated storage areas.
- Use exhaust fans when laundering and showering.
- Respond to any signs of mold growth immediately.
- If leasing any of the structure to others, communicate these mold prevention requirements to lessees.

Notes

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