

## Allianz Global Corporate & Specialty

### Water Damage Prevention: A Construction Business Owner's Guide

Water damage losses are a major cause of loss during construction and represent the majority of Builder's Risk claims. Water damage occurs as a result of water entering the building envelop or from internal building releases. The mitigation of water damage losses can dramatically reduce Builder's Risk claims, increasing the contractor's profitability and preventing project delays. Many water losses are preventable by reducing construction defects. Expensive repairs and project delays can be avoided through awareness of the typical water damage causes and taking steps to prevent them before, during and after construction. Contractors should be aware of the typical water damage causes listed in the table below and pay particular attention to their mitigation.

#### Table of Typical Water Damage Causes Observed:

<b>Unsecured Building Openings</b> <ol style="list-style-type: none"> <li>1. Door and window openings not secured or secured incorrectly</li> <li>2. Roof openings not secured or secured incorrectly</li> </ol>	<b>Building Envelope System Deficiencies</b> <ol style="list-style-type: none"> <li>1. Door, window and exterior wall deficiencies</li> <li>2. Roof, gutter and window flashings deficiencies</li> <li>3. Roof deficiencies</li> <li>4. Damp-proofing and waterproofing deficiencies</li> </ol>
<b>Water Delivery or Drainage System Failure</b> <ol style="list-style-type: none"> <li>1. Plumbing system failure</li> <li>2. Fire protection system failure</li> <li>3. Mechanical system failure</li> <li>4. Drainage system failure</li> </ol>	<b>Site Drainage Problems</b> <ol style="list-style-type: none"> <li>1. Improper drainage away from excavations and building structures</li> <li>2. Inadequate retention ponds</li> </ol>
<b>Subsurface Drainage Problems</b> <ol style="list-style-type: none"> <li>1. Dewatering operations issues</li> </ol>	<b>Foundation and Structural Element Problems</b> <ol style="list-style-type: none"> <li>1. Cracks/fissures in waterproofing structures</li> <li>2. Separation of building envelope elements</li> <li>3. Flooded/undermined excavations</li> <li>4. Excessive/premature loading</li> </ol>
<b>Material Storage Problems</b> <ol style="list-style-type: none"> <li>1. Water sensitive equipment installed improperly</li> <li>2. Failed Just-In-Time Delivery results in improper storage</li> </ol>	

#### Pre-Construction

There are several steps that a contractor can take to prevent water damage in each phase of construction. During the first phase, pre-construction, it is necessary to design a formal Quality Assessment / Quality Control (QA/QC) program. Following this program, additional peer review of the plans and specifications should be performed before executing a project. Evaluate the contract documents for areas of water infiltration susceptibility and consider the drainage of water away from the structure and planned excavations. It is also important, before starting the construction, that the contractor evaluate the interrelationship of specified materials and building systems. If an area of weakness is identified, the loss control engineer should be notified **in the form of a Request for Information (RFI). Schedule the installation and testing of piping systems, such as hydronic systems, as early as possible**

in the project. This will minimize damage, as the majority of finish work will not have been started. Backup power and pumping systems must also be considered to prevent dewatering issues during construction.

### During Construction

It is necessary to maintain a company wide full-time corporate Quality Director that enforces adherence to the quality mission statement. The director is responsible for the development of a quality manual, and the auditing and improvement of on-going projects. It is critical that subcontractors' work be included in the QA/QC program and that the "no defects" policy is incorporated into the language of their subcontracts. This policy should be reinforced through inspections, documentation and photographs. Specifically review the coordination of subcontractors' scopes to determine if waterproofing details have been overlooked. To strengthen these efforts dedicate a team that specifically focuses on water protection. They will be responsible for tracking, monitoring and repairing problems that arise. If internal resources for inspection are not available, or the project type is outside of the company's typical expertise, the use of consultants is prudent. Consultants may be more qualified to identify deficient construction. A budget should be established to train employees and key subcontractors pertaining to company quality procedures. They should then be able to recognize and resolve water issues.

During active construction, establish a weekly punch list to mitigate water issues, and close-out all issues weekly. Don't allow unresolved problems to persist. Mock-up all critical waterproofing systems prior to construction and discuss critical building system details and inspection concerns. Throughout construction, perform frequent testing and if a problem is found, address it immediately. Never pay for work with waterproofing issues unresolved. The structure of the building should be fully enclosed, all windows, doors, walls and roofs complete, prior to the installation of finishes (never allow scheduling concerns to modify this construction sequence). Perform material verification to determine that installed materials are as specified. If the finishing materials are stored in the building prior to installation, they should be on pallets and covered adequately by tarps or plastic sheeting.

### Testing

Once the roof membrane is installed on your construction project, extensive water tightness testing should be conducted. This testing can be performed by a roof testing expert using Electric Field Vector Mapping (EFVM) or similar testing techniques. After this testing has been performed, maintain a roof free of debris during construction and watch for low areas that might form. If there are any, quickly address and repair the problem before damage to the membrane occurs. In addition to water tightness testing, make sure that fire protection systems are hydrostatically tested per requirements of the most recent edition of NFPA 13 "Standard for the Installation of Sprinkler Systems" and monitor for leakage during testing. In addition, air pressurization testing of all piping systems should be performed prior to charging with water, even if the system passed a hydrostatic test previously. Always charge piping systems by zone and not with all valves open. This will minimize the chances of a large unnoticed water release. Establish personnel whose sole responsibility is the monitoring of piping systems for at least the first 24 hrs when charging piping. (Make clear that it is charging piping with water, the way its stated here it sounds like charging with electricity).

## **Take Action During or After an Emergency**

To ensure that prompt and proper action is taken during an emergency, a formal Severe Weather Disaster Plan should be developed, describing job duties in case of severe weather events. The plan should include all possible scenarios and a specific course of action for each. Delegate one person to be in charge that will take control during an emergency and initiate the established plan. In the event of a severe storm or hurricane, utilize your severe weather disaster plan or hurricane plan checklist to secure the site and structure.

If structural failures occur, such as cracks or fissures, as a result of settlement or displacement, contact the structural and geotechnical engineer for advice immediately, rather than making aesthetic corrections to the structure. During construction, prevent the accumulations of snow and ice to prevent structural failures and water infiltration, especially when the structural system is not fully established. Provide security personnel with a list of who to call 24/7 in the event of an after-hours water release.

## **Post-Construction**

During the project close/post-construction period, it is important to maintain a dedicated punch list team and reserve for punch list related repairs to ensure that adequate resources exist to close the project properly. Address the punch list items on a weekly basis, this way there should only be a week's worth of punch list items remaining at the end of the construction period. Maintain a team that can respond quickly to warranty issues, and all water issues should be resolved as soon as possible and no later than 48 hours. Take all "good faith" efforts to prevent further damage if water damage is discovered.

## **How Your Insurance Partner Can Help**

Your insurance carrier and on-site field engineers can help you to identify risks and prepare appropriate risk management plans and programs. They can assist in inspecting your construction site and use their loss experiences and expertise to evaluate potential water damage risks. "Our observation of industry-wide loss trends provides Allianz with tremendous insight that we share with our customers. Allianz is committed to partnering and sharing loss experiences and lessons learned with our Builder's Risk insurance customers to reduce losses, decrease project delays and increase owner satisfaction." states Edwin Van Zijll, Vice President of Underwriting for the Construction Department of Allianz Global Corporate & Specialty.

## **Conclusion**

Preventing water damage is critical to you as a Construction Business Owner, even if insurance is in place, because at least a portion of these losses are absorbed by the Contractor. These losses can include property damage, debris removal, re-work, delay costs, lost profits and reputational damage. It generally costs very little to prevent water damage and primarily requires a focus on quality, planning and testing throughout the construction process. Minor efforts and diligence during the construction process can prevent loss. The review and adherence to the points discussed in this article can markedly improve a contractor's profitability and result in the successful completion of projects on-time

and on-budget. You can contact your insurance carrier for a list of water damage prevention considerations.

Visit [www.agcs.allianz.com](http://www.agcs.allianz.com) for more information about Allianz Global Corporate & Specialty and Allianz Risk Consultants.

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