Water Intrusion - Assessment Checklist

Water intrusion into structures can occur via several failure modes including piping rupture due to overpressure or freezing, valve failure, accidental actuation of automatic fire sprinklers, appliance overflow or failure, acute or longer term building envelope failure and many other sources of intrusion. The property damages and business disruption created from these failures can be significant. Factors that can influence the size and magnitude of such a loss include the use of the structure, existence of early notification systems, and the extent of mitigation plans. Additionally, the extent of knowledgeable staff on premises which are familiar with critical water control valve locations and operation and have been trained in mitigation and restoration best practices can have a dramatic impact on the overall magnitude of the event and disruption. This checklist is designed to address potential sources of water intrusion, inspection procedures to implement and Liquid Damage Prevention Plans to mitigate risk of damage and business disruption during a water intrusion event occurrence, and recommended restoration and recovery procedures.

Pre-Event Actions to Implement

Unless otherwise noted below, items that are listed as an action step or procedure should be conducted on at least an annual basis. When any alteration, renovation or modification is made to the building or structure, the inspection items listed below should be conducted.

Pre-Event Survey – Internal Piping Systems

- ☐ Survey structure and identify potential internal and external entry sources of water intrusion **(semi-annually)**
- ☐ Create diagram or map for each liquid source system (domestic, waste, fire protection, process water, etc.) showing zonal, floor and main water control (shutoff) valves
- ☐ Diagram should clearly identify the areas associated with identified water control valves – display what area is controlled by which valve using color coding of the floor areas
- ☐ Assure each water control valve is equipped with securely-affixed label with identifying code/number and indicating area controlled
- ☐ For piping entering any basement or ground floor levels from below grade, assure that any shut-off valves have been identified outside of the structure. This will also allow quicker access to shutoff valves if the area is being flooded
- ☐ Assure all water control valves are in good and operable condition, open and close freely and that any tamper or monitoring equipment is functioning
- ☐ Assure a master list of water control valves is readily accessible by building engineering and maintenance personnel
- ☐ Survey all floor or other internal drain openings to assure each is free and clear of obstructions, refuse, dirt, etc. **(quarterly)**
- ☐ Inspect the condition and tightness of any floor curbs and any seals provided at floor openings to lower floors **(quarterly)**
- ☐ Inspect and where possible, test drains to assure each terminate freely to a repository on the external of the structure or to internal drain piping that is secured and free/open of blockage **(semi-annually)**
- ☐ Inspect and test, where possible, any sewer backup preventers or devices to assure they are in good working order and operable **(quarterly)**
- ☐ Assure that all rooms or enclosures housing water piping networks, fittings, tanks and control valves, especially those with exterior-facing walls, are provided with heat from reliable systems that can maintain a minimum temperature of 50°F (10° C) **(seasonal)**

Pre-Event Survey – External Building Envelope

- ☐ Survey potential external entry points of water intrusion due to inclement weather including windows, doors, vents, wall air conditioners, wall penetrations, etc. **(semi-annually)**
- ☐ Inspect to assure weather-stripping and seals are in good condition and not crimped, torn or damaged **(semi-annually)**
- ☐ Assure that all openable windows and doors close tightly and self-closing door appurtenances are functioning correctly **(semi-annually)**
- ☐ Assure that exterior entries to basement and lower level areas are provided with drainage or curbing to keep surface water out of the building **(semi-annually)**
- ☐ Where safe and accessible, have trained maintenance and building engineers inspect roof drains, scuppers, gutters and downspouts on a regular basis to assure they are in good condition and not obstructed with debris, laves, limbs, etc. **(quarterly)**
- ☐ Where safe and accessible, have trained maintenance and building engineers inspect roof systems to assure no missing shingles, damaged or loose ridge vents, missing or damaged water and ice shields, water ponding, other physical damage exists to roofing systems **(semi-annually)**
- ☐ Where safe and accessible, have trained maintenance and building engineers inspect exterior cladding of structure including siding, clapboard, EIFS, etc. to assure no visible damage, missing or unsecured components **(semi-annually)**
- ☐ Where safe and accessible, have trained maintenance and building engineers inspect to assure there are no unprotected openings into the wall system(s), unsealed openings around penetrations such as vents, electrical conduit, HVAC wall units, etc. **(semi-annually)**

Pre-Planning

- ☐ Develop contractual relationships with water and liquid damage remediation, heating and restoration vendors and include key contact information within the LDPP. If appropriate, provide differing contacts for differing types of leaks, spills or water damages, recovery and restoration
- ☐ Develop a written Liquid Damage Prevention Plan (LDPP) for the structure which identifies high risk areas of potential damage as identified in the facility surveys.
- ☐ Configure the LDPP to address and respond to both clean water incidents and contaminate water incidents. Where other liquid exposures exist, they should be addressed in a specific section of the LDPP
- ☐ The LDPP should include or reference a diagram of all domestic and fire protection systems showing location of zonal, floor and main water control (shutoff) valves and tanks
- ☐ The LDPP should contain a log of reportable water intrusion events to assist in identifying leaking or intrusion trends and should comprise date, location, source of intrusion, extent of damage, duration of response and restoration activities, etc.
- ☐ The LDPP should identify responsibilities for personnel designated to respond to a water intrusion event, including off peak times and when the facility is closed from operations including a stop flow (shut valve) authority procedure designating LDDP members that have the authority to shut down valves when a water intrusion event occurs.
- ☐ The LDPP should include clear instructions and procedures on response protocol and identify location of LDPP reference diagram and valve closure instructions
- ☐ Provide training on the existence and use of the LDPP to all building maintenance and engineering personnel as well as supervisors and managers **(semi-annually)**
- ☐ Inspect to assure that the facility contains a Water Intrusion Response kit on premises containing flashlights and emergency lanterns, electrical extension cords, ground-fault circuit interrupters (CFCI) with multiple taps, plastic buckets (5 gallon), wet/dry vacuum, rubber boots, hoses equipped with required adaptors, squeegees, pipe wrenches and fire sprinkler shut-off devices **(semi-annually)**
- ☐ Acquire and stage spill and leak cleanup supplies at critical locations within the structure to enable rapid response and mitigation
- ☐ Assure that heat is maintained at all times during frigid and freezing weather within rooms or enclosures that comprise piping or equipment susceptible to freezing **(seasonal)**
- ☐ In warm climate regions where exterior or equipment is susceptible to freezing (HVAC, sprinkler risers, etc.), provide in the LDPP procedures for freezing weather conditions not common to your area. Contact your equipment vendors for solutions on temporary drainage of the system or continuous flow of the systems that will maintain water temperature above freezing.

- ☐ Inspect and validate required spill and leak mitigation supplies and replenish as required **(semi-annually)**
- ☐ Update the LDPP piping and control valve diagram when new liquid piping systems and components are added to the structure. Review and revise the LDPP accordingly **(semi-annually)**
- ☐ Consider the installation of an approved, water intrusion detection system at critical source areas of water entry or release with monitoring at a constantly attended location such as a security office or main control room
- ☐ Update the LDPP on a regular basis or as required to comprise system and piping changes, personnel changes and assigned responsibilities **(semi-annually)**
- ☐ Conduct re-inspections of the facility components at the frequency indicated above **(semi-annually)**
- ☐ Conduct component, system and notification testing of any installed water intrusion sensor detection systems within the structure **(quarterly)**

Actions to Implement When a Water Intrusion Event Occurs:

Response

- ☐ Activate the LDPP (Liquid Damage Plan) and provide immediate notification to all appropriate parties (including building engineer and maintenance personnel) as listed in the Plan based upon the type and location of the event
- ☐ Appropriate response members should assemble at the site of the intrusion to evaluate the extent of the leakage or intrusion and activate the LDPP accordingly
- ☐ Designated response members should move to staging areas identified in the LDPP to initiate viable mitigation procedures including liquid shutoff of zonal, floor or area control valves
- ☐ Immediate notification to other Team members as outlined in the LDPP should occur to implement protective mitigation actions of vulnerable materials, stock, goods, equipment or other assets including removal of exposed items or application of protective coverings, spill control, water damming set-up, temporary drain measures, etc.
- ☐ Notification to external authorities, as warranted and recommended by the LDPP, should be initiated where assistance will be required (local utility service shutoffs), where personnel safety is at jeopardy or where nearby facilities may be exposed
- ☐ Depending upon the magnitude of the event and where warranted and required within the LDPP, notification of pre-arranged restoration and recovery mitigation firms should be commenced.
- ☐ Activate the LDPP to investigate potential leaks in piping, fittings and valves where the interior of the structure experiences freezing conditions. Note that systems incurring freezing of content should be shut down and drained while piping thaws and verification of system integrity is conducted by an HVAC, plumbing or commercial fire sprinkler contractor

Restoration and Recovery

- ☐ Assure that the LDPP (Liquid Damage Plan) includes a section that addresses responsibilities and procedures to follow for restoration once the water intrusion event has ended or mitigated
- ☐ Assure that any approved recovery and restoration vendors are listed within the LDPP with their appropriate contact information, e-mail addresses, phone numbers, etc.
- ☐ Activate the restoration and recovery component of the LDPP (Liquid Damage Plan) as soon as the event has ended or been mitigated, including contacting approved vendors to support cleanup and restoration
- ☐ Assure adequate spill, cleanup supplies and necessary equipment are stored in a pre-positioned protected place and that adequate supplies are available on site. This might include spill control material, water vacuums, fans, tarps, plastic sheeting, utility tape, and other materials used to support restoration, cleaning and recovery.
- ☐ Assure that a member of the LDPP Team is assigned and equipped to take photographs or video of the areas damaged and evidence of mitigation and restoration to support insurance claim submission

Resources / Standards

The references are:

AIG Insight Water Intrusion COM-CG-12-0020

AIG Insight Cold Weather Precautions COM-CG-09-0044

AIG Insight Emergency Response Checklist – Flood COM-CG-13-0032

AIG Insight Emergency Response Checklist – Snow Loading COM-CG-13-0036

AIG Insight Frozen Pipes COM-CG-12-0028

AIG Insight Flood & Water Damage COM-CG-11-0004

AIG Insight Snow Loading COM-CG-11-0012

For further information, contact your local AIG Risk Property Engineer