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Wet Work Permits and Water Damage Mitigation

Risk Engineering

Contents

Losses stemming from water damage on construction and renovation jobs are frequent, and can quickly become costly, as well as cause extensive delays. Sources of water damage vary and include weather, deficient design and installation, and wet systems such as fire protection and domestic water systems.

Based on Chubb's claims data, leading causes of property damage during the course of construction involve water intrusion as the result of severe weather events, as well as non-weather events ranging from quality control deficiencies to inadequate waterproofing measures. Water damage exposure increases with the number of water sources and stories within a structure. Occupancies with large numbers of stacked water sources and plumbing also increase the chance for leakage.

A formal water damage prevention plan should include review of building and water system design, water systems quality control, and management control of internal and external sources. The plan should include response protocols to address situations when water does leak as well as reporting procedures, and training. It is usually a case of not if, but when your building or jobsite experiences an escaped liquids event.

Water damage caused by work on piping, pumping, drainage or mechanical building systems can be mitigated with a plan that includes wet work inspection, monitoring and permit program. The Chubb permit program is similar to a hot work permit, and should be used to help bolster course of construction water damage mitigation measures.

A wet work permit can apply to any construction, renovation or routine maintenance-related wet work activity, including any work involving water and non-ignitable liquid where escaped liquid can damage the project, structure, building, or materials. This can include plumbing work, installation & maintenance on wet systems including fire sprinkler, domestic water, chilled and hot water systems, sump pumps, wet taps, new construction, storm water and drainage, exterior works, and filling or pressure testing. Procedures can be implemented for wet work performed by both employees and outside contractors.

Water Damage Prevention and Wet Work Permits

Bolstering the Water Damage Plan with Wet Work Permits

Management on most jobsites today recognize the value in implementing some level of water damage mitigation planning. This may include regular tours, inspections, formal quality assurance, response protocols, water damage spill kits, and more. More and more jobsites today use some form of electronic water detection in the most sensitive and susceptible areas. Most plans can be improved by increasing management commitment to consistent tracking, permitting, and inspection of on-going wet work during routine construction and maintenance activities.

Wet Work Permit Program

A wet work permit should be used by any authorized employee, qualified construction manager, or designated contractor performing any wet work. The permit program can be implemented on new renovation or construction projects, and routine inspection, testing, and maintenance activities resulting in the potential for escaped liquids from piping systems, liquid carrying devices, appliances, or mechanical equipment. The permit should be issued by the authorizing individual or designate once listed precautions below are implemented and verified.

Management should supervise the wet work permitting process and authorize qualified and trained designated staff with project knowledge to issue the permits. Before issuing the permit, management should require completion of the pre-wet work evaluation and work site inspection to mitigate risks associated with the work.

Wet work permits can help provide a simple way to assign accountability for water damage loss prevention, and identify a “water watch”. This program, which emulates typical hot work permit programs designed for fire prevention, authorizes specific work activities, verifies pre-work evaluation and mitigation measures, and requires inspection toward completion of the wet work.

Pre Wet Work Evaluation

The permit authorizing individual leads the wet work team, and is usually a manager or supervisor. They conduct the pre-work evaluation and should review the following prior to issuing any wet work permit. The proposed wet work may need to be delayed or canceled depending on the answers to the following questions:

1. Can this work be avoided? Is there a better way to get the job done?
2. Are all wet systems protected from freezing?
3. Are inclement weather conditions (alerts) actively monitored for quick deployment of additional waterproofing measures and protection of sensitive materials?
4. Are the domestic, fire protection, chilled and hot water systems monitored / alarmed?
5. Are water detection devices installed for high sensitivity areas?
6. Does the site / work area have regular documented patrols to check water systems, especially after hours?
7. If high value or long lead time equipment (e.g. electrical gear, medical equipment) is installed before piping systems are tested and monitored, is adequate protection in place, such as monitored water detection devices, protective tarps, etc.?
8. Are fire protection system valves secured (chained and locked) in the appropriate position (open or closed) to prevent unauthorized operation?
9. Are main fire protection control valves tagged to indicate who is authorized to operate?

10. In the event of a leak, can the fire sprinkler valves quickly be unlocked or operated by authorized personnel?
11. Are written response procedures and spill containment kits available in the event of a water system failure? Are water spill kits located at designated locations? Are there enough kits for the project?
12. Are water supply shut offs (valves) for each floor or zone easily identified and labeled on a plan, posted in select areas, communicated to workers on site and reviewed at each jobsite meeting?
13. Are sump, storm water or sanitary pumps needed for any part of the project? Are they monitored / alarmed or routinely inspected to confirm operability? Are back up pumps and redundant or back up power supplies available?
14. Has wet work been coordinated with the building owner or facilities manager to ensure systems they need remain on line and the building sprinkler system remains on line? If the systems need to go offline, has the fire protection system impairment been reported to the local authority and insurance carrier?

Worksite Inspections

The person conducting the wet work inspection should review the following and address unsatisfactory conditions before issuance of a wet work permit:

1. Review the nearby mobile spill response kit to ensure it contains adequate provisions:
   - High-volume wet vacuum with discharge hose
   - Heavy duty sorbent brooms and rubber squeegees
   - Heavy duty electrical extension cord
   - Flexible spill containment dikes
   - Filled sand bags
   - General Tool Box
   - Door Wedges

   - Portable Lighting
   - Plastic Tarps / Sheets
   - Pipe clamps
   - Pipe diagrams / valve locations
   - Policy with Key Contact Information

2. Are pressure testing devices suitable for the testing conditions (pressure, flow rates, temperature, etc.)?
3. Does installer have a copy of the written water damage plan detailing what to do in the event of a leak, pipe burst, or related emergency?
4. Does installer know the location of the shut off valves and are they accessible?
5. Are the valves placarded or tagged for easy identification?
6. Are valve charts and pipe diagrams quickly accessible at the location or work being performed?
7. Has the piping been drained prior to the start of any wet work?
8. Have floor slab penetrations or cracks through which a leaking fluid may pass and damage areas below been protected?
9. Are electrical and other sensitive equipment protected from water damage?
10. Are all nearby drains (floor and sink) in the area in good working order?
11. If work is being performed on the roof, are temporary or permanent roof drains / scuppers connected, free of debris and functioning properly?
12. Has a qualified person been designated as the dedicated water-watch?

Commissioning a Sprinkler System

Fire protection sprinkler systems can easily be the source of water damage during course of construction or renovation. During commissioning, review the following:

1. Does the building have sufficient and reliable heat? Sufficient heat is considered at least 40 F and above. If not, consider draining the system after testing to avoid freezing and bursting pipes. If yes, consider leaving water in

the sprinkler system with the branch line valves in the closed position until the system is ready for commissioning or as otherwise instructed by the building owner or authority having jurisdiction.

2. Once the waterflow alarms are reporting to a monitoring alarm margins off system, the sprinkler system should be commissioned and activated. A formal fire protection system impairment protocol should be implemented at this time to manage all future impairments.

Wet Work Permit Issuance

The wet work permit should only be issued after satisfactory review of the listed precautions. After assigning qualified staff as the "wet work watch" the supervisor should sign and issue the permit to the authorized wet work individual. Permits should be posted at the wet work site and should expire no later than the end of the supervisor's shift, or 8 hours, whichever is shorter.

Wet work watchers should be trained on the response procedures in place in the event of a leak or accidental water discharge, including a review of all applicable shut off valve locations.

The supervisor or manager should inspect the work site after work is completed. The supervisor can then sign and date the permit verifying the work has been completed in accordance with the permit with no signs of leaking upon formal postwork inspection. The permit should be returned to the authorizer for final permit completion then filed for documentation. At the end of each work day, project management should ensure all windows and doors (and other openings) have been closed and that water sources have been turned off and drained as necessary. The work area should continue to be regularly inspected including after-hours coverage by security personnel as available. Follow up inspections may also be prudent in critical areas or around critical systems for several days after the work has been completed.

Conclusion

Developing and implementing a written wet work permit program can be an effective supplemental component to a formal water damage prevention and mitigation plan. A program for the control of wet work performed by maintenance staff, outside service providers and contractors should include measures to identify controls, promote inspections and require authorization to work on active / charged systems where water damage loss is possible.

A Legacy of Expertise

For more than seven decades, Chubb Risk Engineering Services has provided world-class risk engineering to help our customers eliminate or reduce insured loss potential. We have continually demonstrated our ability to be flexible to meet our customers' changing needs. Chubb's risk engineers analyze the customer's overall approach to risk management, review loss history, propose programs to help correct deficiencies and work in tandem with customers to improve their risk management programs. Chubb's risk engineers are known for their business acumen, technical skills, and ability to communicate effectively.

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Form Form 09-10-0889 (Ed. 3/18)