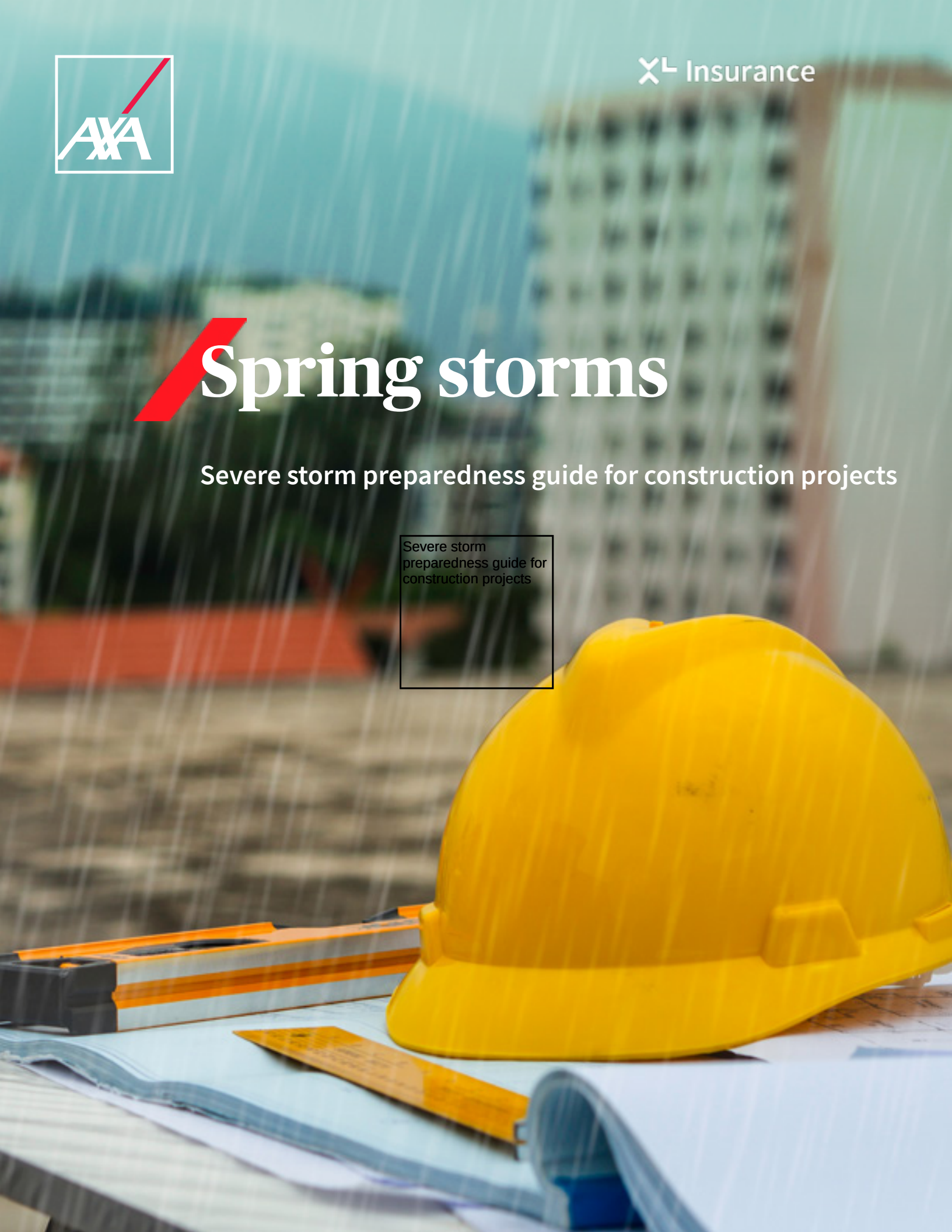
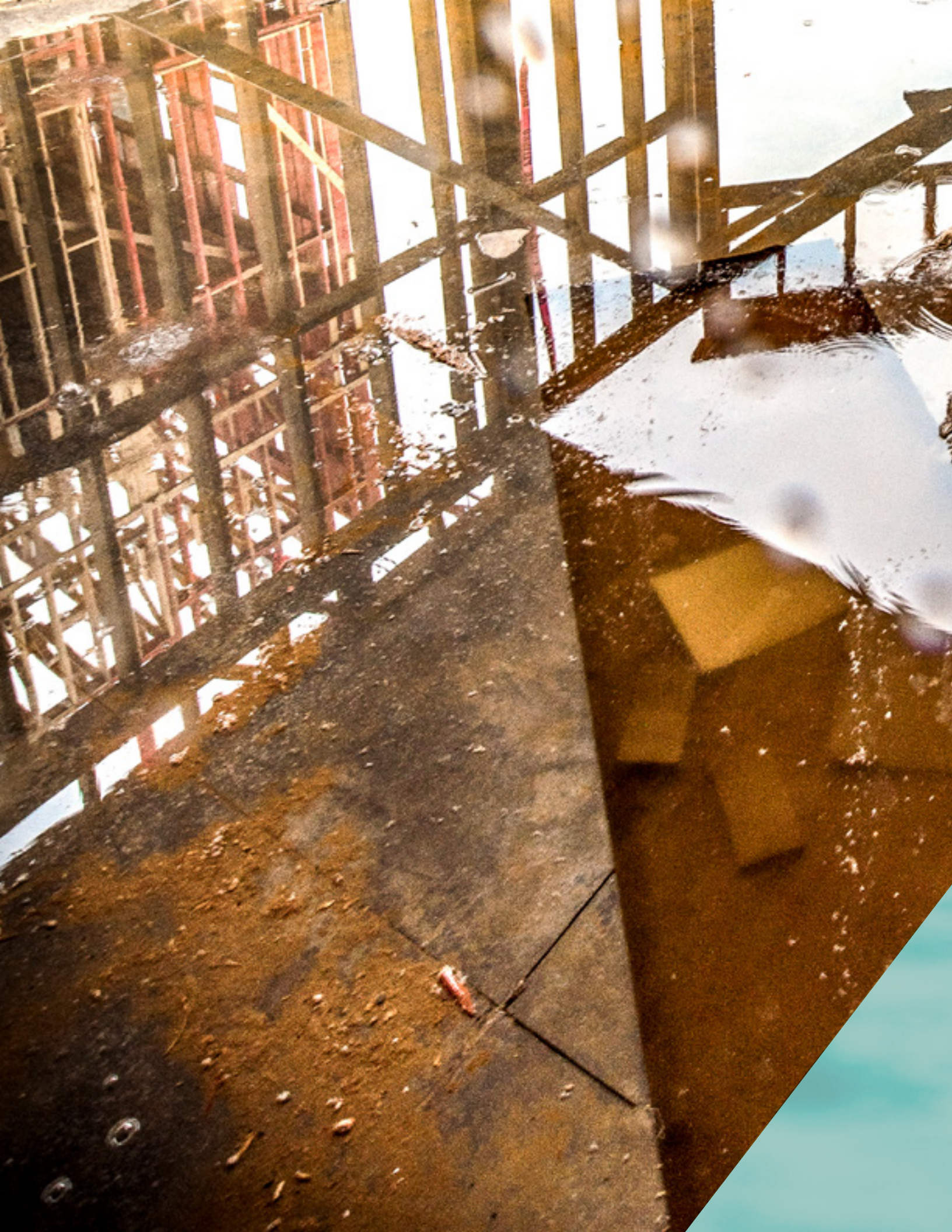
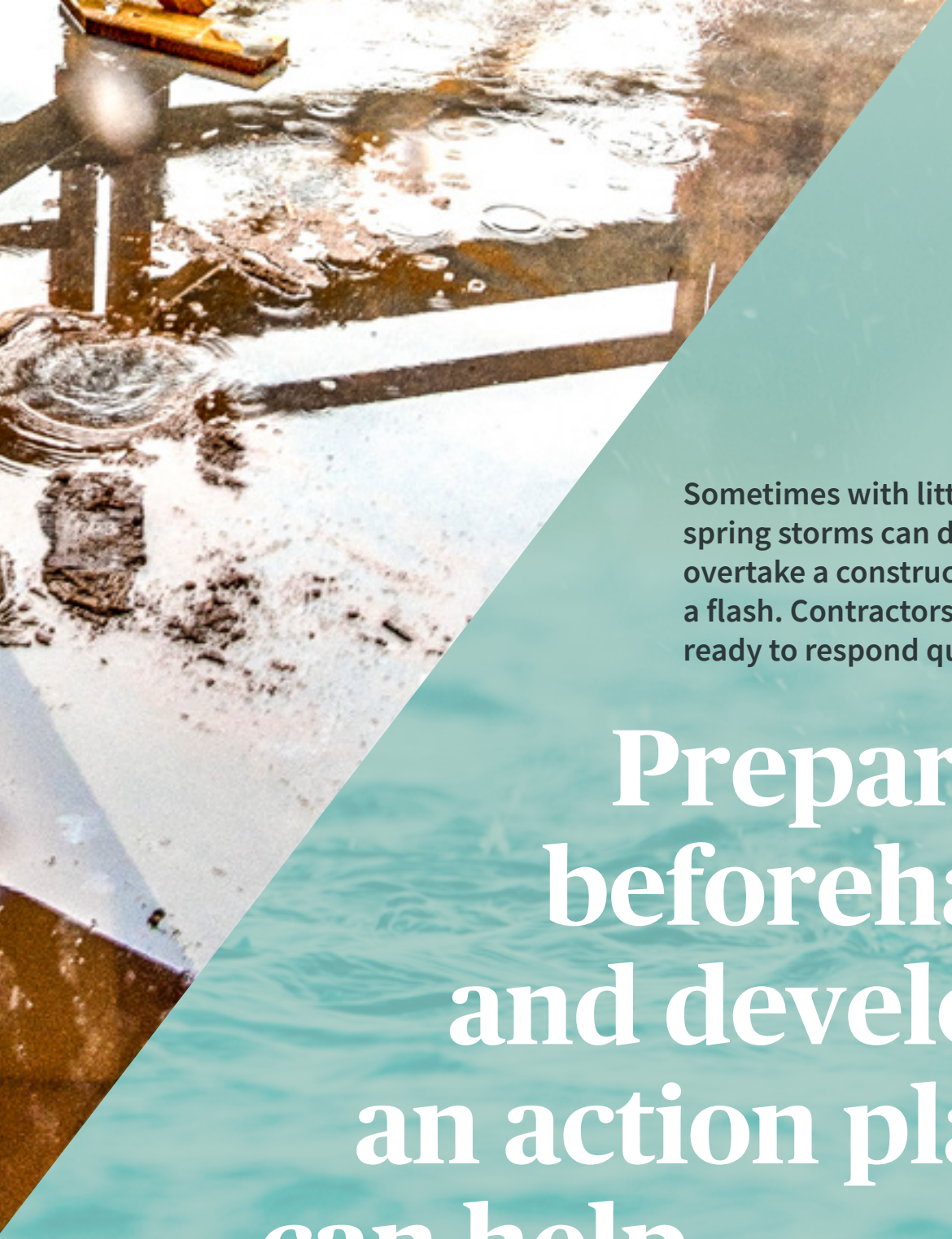

AXA
XL Insurance
Spring storms
Severe storm preparedness guide for construction projects
Severe storm preparedness guide for construction projects





Sometimes with little warning, spring storms can develop and overtake a construction site in a flash. Contractors must be ready to respond quickly.

Preparing beforehand and developing an action plan can help.

About spring storm season

U.S. spring storm season

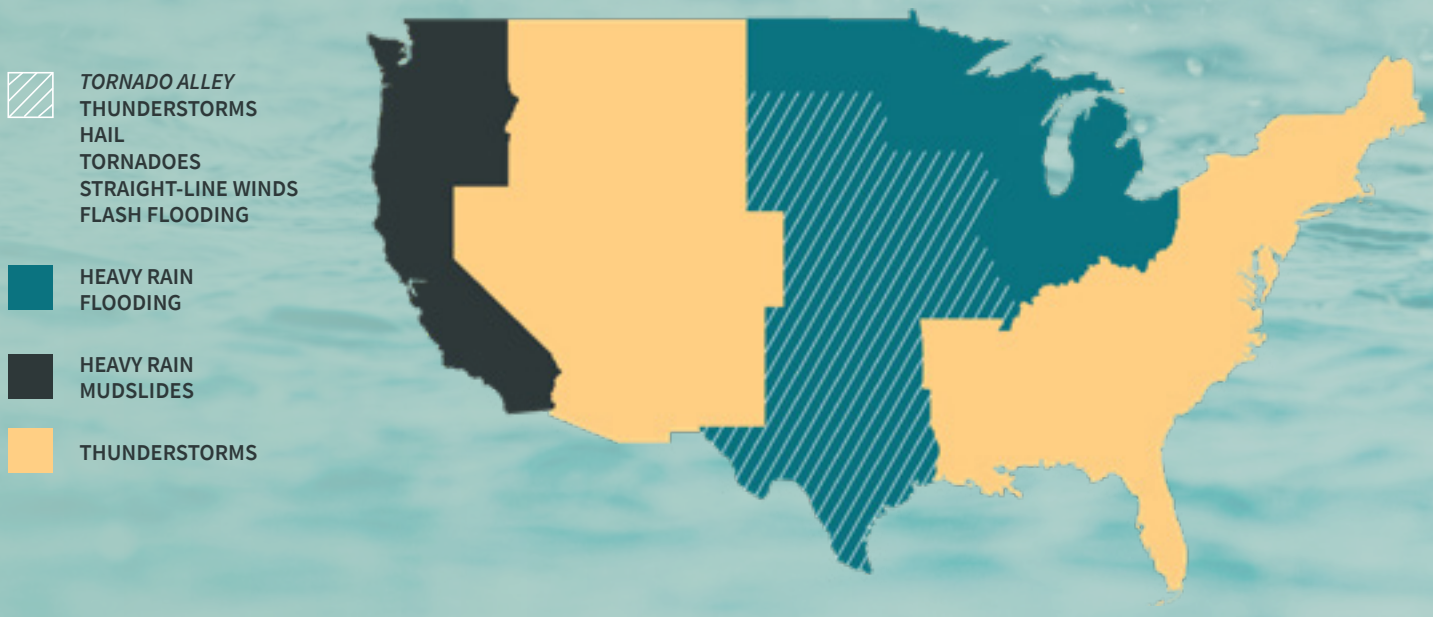
March 1- June 30

Timing

Thunderstorms and their related weather events occur more frequently in spring due to warm, humid air coming from the Gulf of Mexico meeting with colder, drier air from the north. On average, these storms last from about 30 minutes to an hour.

Types of events by region

- Most severe spring weather is caused by thunderstorms, which can bring hail, tornadoes, straight-line winds, and flash flooding. This type of weather is especially prevalent in the "Tornado Alley" area of the south-central U.S., which most commonly includes the states of Texas, Oklahoma, Kansas, Nebraska, Missouri, Iowa, and South Dakota. Tornadoes can occur in all states and can be quite deadly, as recently seen in Tennessee. On average, about one-third of tornadoes occur at night, and more than 40% of tornadoes in Tennessee, Arkansas, and Kentucky are nocturnal. These nighttime events can be particularly damaging since people often do not have time to prepare.
- Straight-line winds can occur outside of thunderstorm activity in these same areas. These windstorms are common, blow in one direction, and can last up to a full day.
- Heavy spring rains can cause flooding in the Midwest.
- Rains can potentially lead to mudslides, especially in West Coast states.
- In areas where snow accumulates during winter, heavy rains and/or warmer temperatures can lead to rapid snowmelt that contributes to flooding.



Potential Losses

The primary losses that AXA XL sees from spring storms are water damage from storms that can dump significant rainfall, fires from power surges caused by lightning strikes, and other damage from high winds and hail.

Pre-season planning for exposures

To prevent and minimize losses, be aware of the typical spring weather events for your area, implement a weather monitoring plan and routine, and prepare to take action when storms are on the horizon.

Review project schedule for spring activities
Determine the construction activities scheduled to take place during the spring storm season. Evaluate the potential exposures for various construction phases during the season, and consider the following questions to develop potential action plans for each exposure.

Exposure: water damage
Spring storms are notoriously quick and can dump inches of rain in a matter of minutes—or over the course of several days. In these cases, water can enter an unfinished building quickly or pool in tarps and other collection repositories. In addition to protecting the site from water damage, construction managers need to know how they will manage significant rainfall, collected water, and flooding.

- Are contractors working on the structural frame?
- Is the building open and exposed to rain?
- Are drainage systems complete, or is there a temporary drainage plan in place?
- Is the roof in place? If not, will a tarp or other materials be used for protection? How will you drain the tarp, and how often?
- If you collect rainwater, how will the water be shed or released?
- Do you have retention basins or other water collection systems in place? Are you allowed to release water near your site? (Knowing if your site receives water or sheds it to surrounding areas is important for making a plan to collect, store, and/or release water.)
- Do you have water pumps or other equipment to remove water from interiors and dry structures, if possible, after rainfall?

Exposure: wind damage
Straight-line winds can gust up to 100 mph (58 mph is classified as severe by the National Weather Service), while tornado winds can exceed 100 mph. The U.S. Occupational Safety and Health Administration considers winds exceeding 40 mph (or 30 mph if the work involves handling materials) as high winds.

While you can't completely prevent damage from extremely strong winds, you can secure and protect the construction site and materials to the best of your ability.

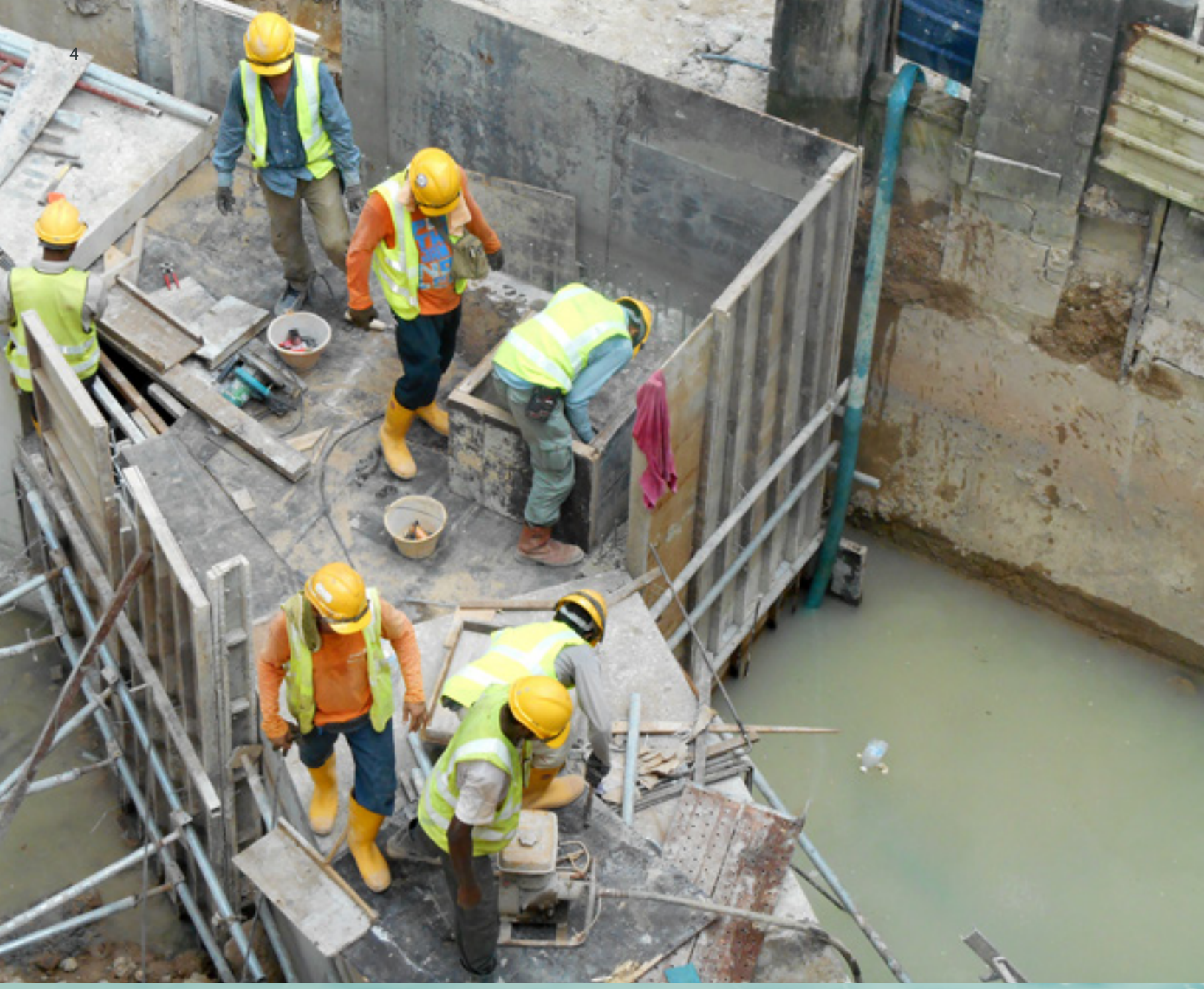
- Are contractors working on the structural frame? Is the building open and exposed to wind? If temporary enclosures will be used, are the materials and attachment methods designed to withstand potential wind loads?
- Ensure that temporary construction (scaffolds and forms) and partially completed structural elements (masonry, precast, and CIP walls) are adequately braced against potential wind loads.
- What portable equipment are you using? Can you secure this equipment quickly in the event of high winds?
- Ensure boom lift, hoist, and other lifting equipment operators understand they should stop operations when sustained wind speeds reach 30 mph. Crane operators should not attempt picks if wind gusts exceed 20 mph.
- When cold fronts and dry lines are predicted in some areas, there is the possibility for straight line winds. When contractors are aware of this possibility, they can lower crane booms and reschedule crane activities for another time.
- What materials are on site that could become projectiles during high winds (e.g. lumber, sheets of plywood, metal panels, insulation, etc.)? Can you make sure these items remain secure until they are ready to be used or installed? If the materials are already in use, what is the best way you can quickly secure these items in the event of coming winds?
- What other materials should be covered or secured (e.g., topsoil, mulch, gravel, aggregate, etc.)?
- Regularly (daily or more often as needed) remove loose debris and trash from the structure so debris can't become projectiles in high winds. Cover dumpsters when storms are forecast.

Exposure: lightning
Some equipment, including cranes, can become lightning rods during thunderstorms and sustain damage from these spikes in electricity. Lightning strikes can also lead to power surges that can destroy electrical panels or even cause transformers to explode. The solution is to ensure proper surge protection is in place.

- What equipment will you be using? Do you have equipment (e.g., cranes) that could possibly become a lightning rod?
- Do you have proper surge protection in place?
- Do you have a lightning detector available at the site to provide advance warning?

Exposure: hail damage
Hail is created during a storm when strong updrafts of air carry water droplets high enough to freeze. Severe thunderstorms can produce hail that is an inch or larger. Contractors need to protect materials or structures that can sustain hail damage from a storm.

- Are you using materials that are prone to hail damage (e.g., metal panels)? Can these be stored securely and brought out just before installation?
- If the materials are already in use, what is the best way you can quickly secure these items in the event of potential hail?
- Will there be equipment in use that should be covered or protected to avoid hail damage?



Being weather-aware is the most important thing contractors can do to minimize damage and losses from spring storms.

Monitoring and responding to weather events

1 Create a weather monitoring plan and routine

Weather forecasting is getting better and faster, and spring storm conditions are being predicted earlier. With an organized plan in place, contractors can monitor weather conditions on a routine basis.

- Who are the team members that will monitor and check weather reports?
- How often will your designated team members check the weather to monitor for storm possibilities (e.g., weekly for potential storm activity, daily for pending storms, and multiple times daily for radar activity)?
- What apps and resources will your team members use? Which ones are best for the particular area/region and weather type? What weather alerts should your team members set up on their phones?

2 Connect weather predictions to possible exposures identified in project schedule

Revisit the possible exposures identified in the project schedule and pre-season action plans for severe weather. Check in regularly (i.e., weekly) to connect the current status of construction sites with possible weather events, and update action plans accordingly.

- On weeks with high storm potential, who will audit the construction site to see what needs to be secured, protected, or removed in the event of a storm? Are there available storage spaces and/or materials for securing and protecting items and structures?
- Using this information, can your team develop a "quick action" plan for the week of what should be done if a storm is approaching? Can leaders make assignments for storm preparation to specific people ahead of time? (The higher the storm potential, the more detailed the plan should be.)

3 Preparing your people

Contractors should take the time to discuss spring weather possibilities and action plans with all personnel before the season, and provide regular reminders throughout the spring months.

- How are leaders communicating the planning and prevention process to subcontractors and requiring their participation?
- Have you communicated to your workers about potential weather events and actions to take in the event of these kinds of storms?
- Are your workers utilizing weather alerts on their phones and being aware of changes in the sky that may warn of severe weather?
- Are you alerting them to days when severe weather is more likely so they can be watching for signs?
- Are they familiar with what needs to be done and how they will be notified?
- Do people know where to go to safely wait out a storm?
- Are the construction trailers adequately tied down to resist wind loads, or should people find other shelter?

4 Develop communication and notifications plan

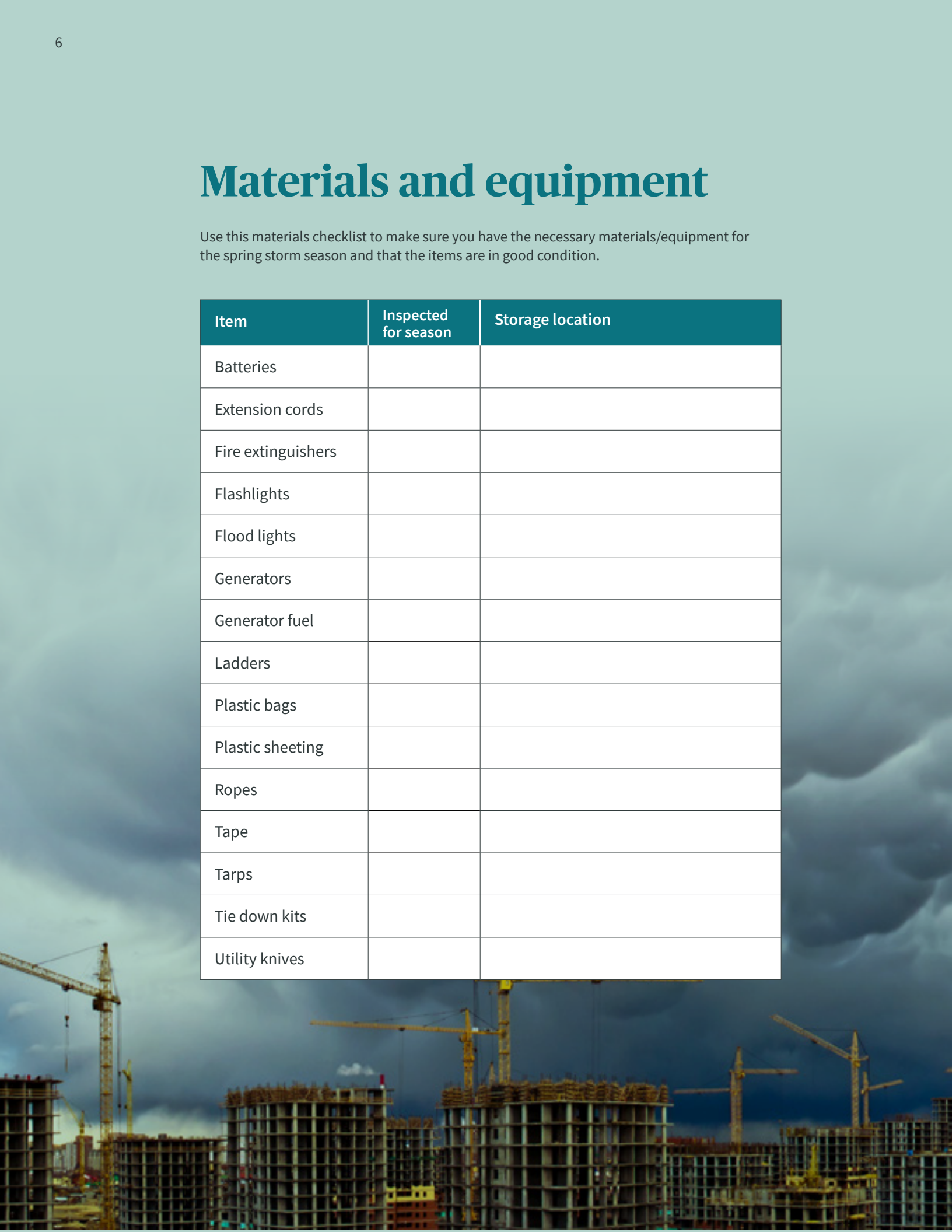
Develop a communication plan before the spring season. This plan should outline how the project team will communicate weather warnings and alerts to everyone working on the site, as well as offsite stakeholders (owner, A/E, subcontractors' offices, etc.).

- Who will lead overall communication and notification planning?
- Who will monitor events and coordinate execution of the plan when a storm is approaching?
- How will they communicate weather conditions and advisories to the rest of the team and trade contractors?
- How will warnings and alerts be issued if adverse weather is imminent? How will workers on site be alerted that a storm is approaching or that there is a possibility for a storm within hours (e.g., air horn, text messages, direction via megaphones, etc.)?
- In communications, be sure to include how much time workers have to secure and protect items before they need to move to a safe place.

Materials and equipment

Use this materials checklist to make sure you have the necessary materials/equipment for the spring storm season and that the items are in good condition.

Item	Inspected for season	Storage location
Batteries		
Extension cords		
Fire extinguishers		
Flashlights		
Flood lights		
Generators		
Generator fuel		
Ladders		
Plastic bags		
Plastic sheeting		
Ropes		
Tape		
Tarps		
Tie down kits		
Utility knives		



Make sure you are ready for other seasonal storms as well as unpredictable natural catastrophes with the other guides in AXA XL's preparedness series:

Winter storms

Hurricanes

Natural catastrophes