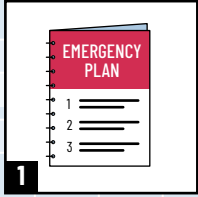


Key Flood-Resilience Measures for Commercial Real Estate in Canada

The commercial real estate industry can implement flood-resilience measures to reduce property damage, business disruptions and potential flood-related injury and loss of life stemming from extreme rainfall events.

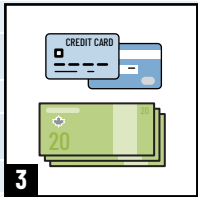
Plans and Procedures



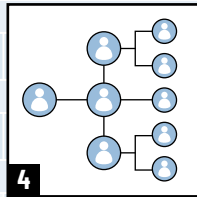
1 Emergency plans



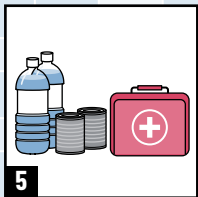
2 Practice drills



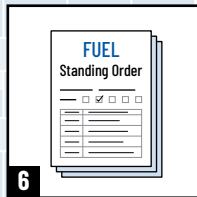
3 Emergency funds



4 Tenant communication channels



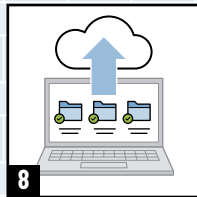
5 Emergency operations centres



6 Emergency response supply contracts

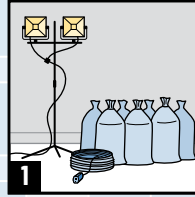


7 Emergency contact information

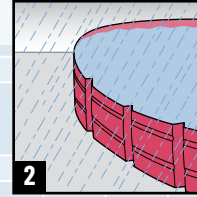


8 Insurance documentation

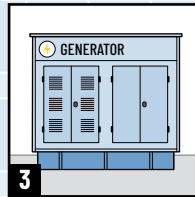
Equipment and Supplies



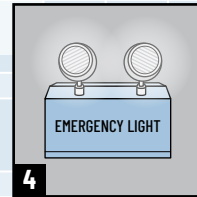
1 Critical equipment and supplies



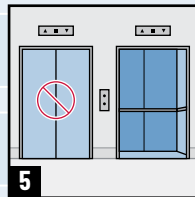
2 Portable flood barriers and sandbags



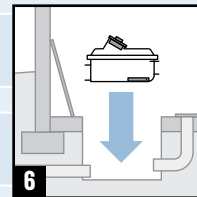
3 Back-up generation



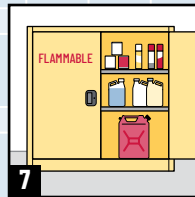
4 Emergency lighting



5 Elevator water sensors

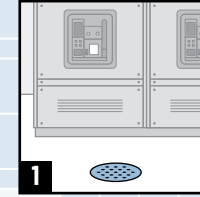


6 Backwater valves

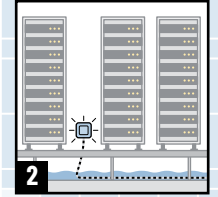


7 Hazardous materials storage

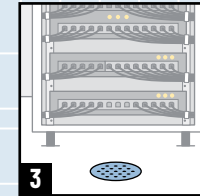
Major Retrofits*



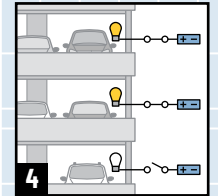
1 Elevating and flood-proofing critical equipment



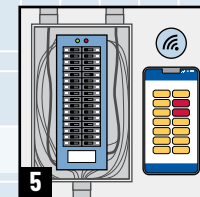
2 Protecting server rooms



3 Protecting high-voltage and telecommunication pull rooms



4 Isolating electrical circuits



5 Electrical panel upgrades

* These retrofits may be cost-prohibitive to implement post-construction, but they may be warranted for critical sites.

Flood-Resilience Measures for Commercial Real Estate in Canada

Plans and Procedures

1. Emergency plans: Emergency preparedness and response plans are in place and include flood event procedures. Procedures updated as required.

2. Practice drills: Train building operations staff on flood event procedures. Practice drills annually.

3. Emergency funds: Designated staff have access to reserve funds (through credit cards and sufficient amounts of cash) for use during emergency operations.

4. Tenant communication channels: Tenant and stakeholder communication channels have been established for emergency situations, including flood events. Contact details are updated semi-annually.

5. Emergency operations centres: Designated space located above expected flood levels is available for operations staff to use as emergency centres. Space is equipped with water, non-perishable food supplies and emergency kits.

6. Emergency response supply contracts: Standing orders are in place with fuel suppliers and restoration and landscaping companies to provide goods and services at pre-arranged prices, under set terms and conditions, as required for flood events.

7. Emergency contact information: Maintain and update contact information for risk management personnel, insurance adjusters and insurance brokers.

8. Insurance documentation: Documentation to access business interruption insurance (e.g., financial statements, lease agreements, inventory counts) is regularly updated, backed-up electronically and stored offsite.

Equipment and Supplies

1. Critical equipment and supplies: Critical equipment and supplies are available on-site to respond to flood emergencies, (e.g., sandbags, sump pumps, portable lights, extension cords, etc.).

2. Portable flood barriers and sandbags: Portable flood barriers and sandbags are available to protect buildings with critical operations (e.g., data centres) from flooding.

3. Back-up generation: Onsite back-up generation equipment and fuel are available and have capacity to power one elevator, all sump pumps, heat pumps, boiler, smoke evacuation fans, fire sprinkler, fire alarm systems, stairwell pressurization systems, and emergency lighting equipment for 72 hours.

4. Emergency lighting: Should back-up generation equipment malfunction, battery-operated emergency lighting is available in critical mechanical and electrical rooms and emergency exit stairwells. Regularly test all battery-operated lighting and systems.

5. Elevator water sensors: Equip elevators with water sensors that prevent access to flood-inundated levels.

6. Backwater valves: Install backwater valves on storm and sanitary sewer pipes.

7. Hazardous materials storage: Store hazardous materials in sealed containers, or in inflammable cabinets located above expected flood levels. Where hazardous materials are stored, location must be equipped with floor drains for proper drainage and floor drains must be cleared of any obstruction.

Major Retrofits*

1. Elevating and flood-proofing critical equipment: Heating, cooling, ventilation, and air conditioning (HVAC) equipment; transformers, switchgear, service panels, and communication systems are elevated above expected flood levels with drains located at the lowest point on the floor. If not feasible, flood-proof rooms.

2. Protecting server rooms: Server rooms are located on higher floors, preferably on a raised platform, with a sump pump installed at the lowest point. Water sensors are installed for leak detection.

3. Protecting high-voltage and telecommunication pull rooms: High-voltage and telecommunication pull rooms are waterproofed and equipped with drainage.

4. Isolating electrical circuits: For multi-level parkades, isolate electrical circuits for each parking level.

5. Electrical panel upgrades: Electrical panels are equipped with WIFI enabled breakers to allow for remote shut off.

* These retrofits may be cost-prohibitive to implement post-construction, but they may be warranted for critical sites.



Scan the code or click the link for additional resources at www.intactcentre.ca