

# Earthquake Hazard Checklist

**EARTHQUAKES** can occur anytime and cannot be prevented. The damage potential of an earthquake can be minimized through preparation and planning. Buildings, equipment and other infrastructure are all susceptible to ground shaking as well as secondary hazards such as fire, liquefaction and landslides. It is a good idea to review and update your company's business continuity plan and earthquake emergency response plan annually. Also, we recommend making sure that your company's property insurance policies are up to date.

## Earthquake preparation (now and ongoing)

- ☐ Complete a seismic assessment/evaluation of the property. The assessment should be conducted by a qualified and licensed structural engineering firm specializing in earthquake review and design.
- ☐ Understand the seismic hazard. What seismic codes was the building designed to, are there any building irregularities or structural deficiencies that need retrofitted? What severity of earthquake hazard are you subject to? Are you in an area susceptible to liquefaction?
- ☐ Evaluate and provide seismic bracing and anchorage for mechanical and electrical equipment, rooftop mounted equipment, storage racks/shelves, cabinets, hot water heaters, combustible liquid tanks, tall and narrow objects that may overturn, fire pump and emergency generator starter batteries, and other.
- ☐ Provide restraints/tethers for equipment on wheels.
- ☐ For vulnerable piping systems consider sway bracing, retaining straps for C-clamp attachments, clearance around pipe and conduit pass throughs, flexibility via swing joints and flexible couplings, weld connections where possible, trenches and drainage designed to contain contents from rupture tanks.
- ☐ Review and provide up-to-date seismic protection for automatic fire sprinkler systems such as bracing and flexibility. Adequate clearance should also be considered. Protection should be provided per the most current edition of NFPA 13 or FM data sheet 2-8.
- ☐ Review and update earthquake emergency response plan. Ensure employees are aware of measures to take if an earthquake occurs while the property is occupied. Ensure your emergency kits are stocked.
- ☐ Perform regular inspection to verify condition and presence of seismic protection measures such as bracing, anchorage, seismic gas shutoff valves, flexible connections and other.
- ☐ Update employee and critical vendor contact information.
- ☐ Discuss/establish agreements with structural engineer, equipment vendors and restoration vendors. Check equipment availability.

- ☐ Engage vendors that can provide support from outside the local area.
- ☐ Assess site accessibility and identify if the property will be accessible or not in the event of an earthquake. Identify alternative routes available.
- ☐ Install local seismic sensors or reliable earthquake early warning system (EEWS) to help with critical shutdown of equipment before ground shaking intensifies.
- ☐ Consider installing automatic seismic gas shutoff valves on main natural gas lines and where gas lines enter buildings.
- ☐ Take pictures of facility and equipment and check to ensure list of assets is current.

## After an earthquake

- ☐ Follow company policy for ensuring employee safety. Aftershocks are expected.
- ☐ Do not enter any building until the local authorities have approved re-entry. Structural evaluations and building recertifications may be required prior to re-entry.
- ☐ Conduct a preliminary inspection of the site and review the building exterior, fire protection systems, utilities (including gas and electrical), storage and equipment when safe to do so.
- ☐ Identify damaged areas and document damage with pictures.
- ☐ Isolate damaged systems and implement emergency procedures as needed for equipment, utility outages or fire impairments. Check gas, water, and electrical systems for damage and shut off as necessary.
- ☐ Verify if the fire sprinkler systems/fire pumps are damaged. Maintain as many fire protection systems in service as possible.
  - ☐ Post fire watch in areas where protection is impaired (if accessible).
  - ☐ Inform fire department and insurance carriers of any impairments.
- ☐ Establish repair priorities focusing on building structural integrity and envelope and fire protection.
- ☐ Implement pre-established restoration plan. Contact designated continuity, repair and cleaning vendors.
- ☐ Ensure proper hot work protocols for repair work.
- ☐ Check electrical equipment before connecting or restarting.
- ☐ Document damages and repairs. Coordinate claims activity with Lockton's Claims team.
  - ☐ Keep receipts and invoices for recovery.
  - ☐ Often a separate accounting code for recovery costs works best.
- ☐ Debrief earthquake event response. Review with personnel what worked and what didn't. Revise the plan if needed. Restock emergency supplies. Prioritize improvements.