

# Weather Advisory Safety Precaution Measures at Construction Sites

Contractors must pro-actively prepare and act in advance of pending weather-related events to ensure all necessary measures are implemented to safeguard their project sites and the general public that may be adversely impacted.

The following are actions contractors should be prepared to execute in advance of potential severe weather-related events on construction projects:

- Contractors should develop in advance, a high-wind preparedness plan. The plan should outline measures to be taken to prepare, secure and protect the construction site from high wind events. Four key areas that should be covered in the plan include:
  1. Proper task planning
  2. Pre-storm preparation
  3. An emergency response team
  4. Post storm inspection and repair procedures on construction sites.
- Closely monitor forecasted weather and advisory reports to ensure enough time is provided to secure required material, equipment and supplies, as well as secure and prepare the project site for extreme weather conditions.

The following details should be contained in the high-wind preparedness plan and executed before shuttering the project site, prior to high wind conditions:

1. Storage of Construction Material/Debris
  - Storage of material and debris should be a minimum of 10 feet from the perimeter of the building, unless the perimeter of the building is fully enclosed.
  - Material and debris should be secured by banding or tying down to prevent displacement caused by the wind.
  - No material shall be allowed to cantilever over the edge of the building perimeter.
  - Loose material and debris should be removed from the roof, setbacks and balconies of the building.
  - Floor slab hole covers must be properly secured/anchored to ensure no dislodgment could occur.
  - Re-shores along the open sided perimeter of the buildings must be properly secured to prevent loosening and falling off the side of the building
2. Masonry Walls Under Construction
  - Masonry that is under construction or demolition must be secured and braced to prevent collapse due to high winds.
  - Special attention must be paid to masonry walls under construction along the perimeter of the building.
  - Protect the cavity of the masonry opening to prevent against water infiltration.
3. Steel Framing
  - Brace and secure all steel frames and light gauge decking.
  - Secure all planks to the supporting structure to prevent dislodgment.
  - Remove all loose bolts and cans from the erecting floor and leading edges of the building.

4. Curtain Wall & Building Façade
  - Reposition and secure curtain wall or façade material an appropriate distance away from the perimeter of the building.
  - Ensure all installed curtain wall or façade units are properly anchored and secured to the structure.
5. Concrete Construction Formwork
  - Concrete form work not weighed down by concrete should be removed or secured with approval and procedure prepared by a professional engineer.
  - Reshores along the perimeter of the unenclosed building perimeter must be secured to prevent the reshores from falling off the building.
  - Loose form work material such as post, ribs, stringers and plywood should be removed from the deck or properly secured, banded and tied own to prevent dislodgment or displacement.
6. Perimeter Netting, Guardrails and Cocoon
  - Horizontal netting should be cleaned of any debris, retracted and secured.
  - Damaged or torn netting should be replaced to prevent flapping in the wind.
  - All vertical perimeter netting, cabling and guardrails must be inspected and secured.
  - Cocoon systems and climbing form work must be properly secured according to manufacturer and/or engineer of record recommendation for high winds.
  - Cocoon systems should be proportioned to account for all potential wind effects, including increases in wind load due to increase in elevation or specific building exposure.
7. Supported Scaffolds
  - All material and debris should be removed from the scaffold.
  - Tiebacks to the structure should be inspected and properly secured.
  - Planking should be removed or properly secured to prevent dislodgment.
  - If the scaffold is netted, consultation with the qualified person or engineer of record needs to take place. Consideration must be given to potential wind loads that may result on scaffold systems that are fully netted. Determination must be made regarding need to remove the netting or possibly cutting holes in the net to reduce the wind loads.

8. Suspended Scaffolds
  - Suspended scaffold rigs should be lowered to the ground or adequate set backs and properly secured. Ropes and lifelines should be removed or secured to prevent rope from swinging and damaging building or breaking windows.
  - Electrical power to the scaffold hoist motors should be shut off.
  - If “C” hooks or clamps are used, they should be removed.
9. Constriction Fences and Barriers
  - All construction fences should be adequately braced and secured. Special attention needs to be provided to ensure adequate wind bracing and transfer of wind forces to braces and their anchorage. Nailed or bolted connections should be proportioned to safely sustain all wind load effects.
  - Barriers should be adequately secured.
  - Construction fence and barriers should be inspected, and damaged components should be removed and replaced.
10. Sidewalk Sheds
  - Material and debris should be removed from the top of the shed.
  - Planking must be secured to prevent dislodgment.
  - Parapet or side section of the sidewalk shed must be inspected and secured.
11. Excavation, SOE, Underpinning
  - Pre-and post-storm inspection of excavation, Support of Excavation and underpinning should be performed.
  - Necessary measures should be taken to complete SOE shoring system in accordance with approved plans if enough time allows or consult with the engineer of record regarding recommendations.
  - All excavated underpinning pits and transfer loads should be completed.
  - If dewatering systems are being utilized, consult with engineer of record and ensure backup generators are available to maintain dewatering operation.
12. Tower Cranes
  - Follow pre established wind action plan procedures that comply with manufacturer and engineer of record requirements.
  - Follow manufacturer or engineer of record requirements regarding Weather Vane Mode for the crane.
  - Inspect all collars and tie-ins, as well as all connections.
  - Prior to the storm, inspection of all base, mast and boom connections should take place.
  - Provide enough protection surrounding the mast base/foundation to ensure proper drainage.
  - Hook block should be raised with no load.
  - Cranes must stop operating when winds speed reach manufacturers recommendations or requirements set forth by governing agency body if more stringent than manufacturer.
13. Mobile Crane
  - Telescopic cranes should retract the boom, outriggers, stow jib then park and secure the crane.
  - Crawler cranes should lower the boom to the ground or otherwise fasten securely against displacement, and secure the body of the crane from displacement as per manufacturer recommendations.
  - Cranes must stop operating when winds speed reach manufacturers recommendations or requirements set forth by governing agency body if more stringent than manufacturer.
14. Construction Exterior Hoist
  - Mast connections, overhead protection, netting, cat head, outriggers and landing plates must be properly secured.
  - Loose debris should be removed from the top of the car, inside the cab, landing and surrounding area.
  - Properly secure hoist cab and counterweight as per manufacturer recommendations.
  - Shut down electrical power to the hoist.
  - Exterior hoist should cease operation when wind reach speed requirements designated by the manufacturer or governing agency.
15. Marine Construction/Barges
  - When possible, demobilization of crane barges/barges should take place several days in advance of hurricane forces reaching the area.
  - When possible, consideration should be given to removing cranes from the barge. When cranes cannot be removed, crane booms should be lowered, and cranes secured as per manufacturer instructions.
  - Crane mats should be stacked and pinned.
  - When possible, barges should be relocated and stored at designated mooring sites.
  - Barges should be secured and anchored.
  - Inspect mooring ropes prior to the storm in order to identify any damage or wear. Lashing fatigue could result in damage and failure of the rope.
  - Stored fuel or liquids should be removed from the barges.
  - Stored equipment and/or material (i.e. piles/caissons) should be banded and secured to prevent dislodgment.
  - Develop a recovery and refloating plan in the event barges break free from moorings.

The high-speed awareness plan should also have the following procedures in place and address:

- Individual or party responsible for monitoring load forces
- Methods that will be utilized to monitor load forces
- Individual or party responsible for implementing the high-speed awareness plan
- Evacuation procedures if required
- Identification of a safety zone beyond the property line of the structure.

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