

Safety Issues

Wind



Tech Tip

It is up to a Competent Person to determine when it is safe to work on scaffold during windy conditions or severe weather.

Simply put, wind is air in motion. We have all seen the effects of wind: downed trees, missing shingles or siding from homes, or unforgettable news footage showing people leaning into the wind or debris flying in the air as a hurricane approaches. Wind exerts a force on everything in its path.

Wind Speed and Force

The actual pressure that wind will exert on an object or structure depends on several variables, the biggest being wind speed.

Force is the pressure that wind exerts on an object, and scaffold must be built to resist wind force. This is most often accomplished through the use of additional ties, guys and/or bracing.

Scaffolding is intended to support vertical loads imposed by work platforms. Although scaffolds are open structures made from mostly round members, wind imposes a horizontal force on the scaffold and its components (legs, braces, guardrails, plank, toeboards, etc.). If the scaffold is not tied, guyed or counter-weighted to resist these forces, it will blow over.

Wind Can Produce a "Suction" Force

It is important to remember that wind not only exerts a positive pressure, but can also produce a negative pressure or "suction" on the side opposite from the wind source. The negative pressure will try to pull the scaffold away from the building, particularly with enclosed scaffold.

Wind blowing parallel to a scaffold run can create a similar negative pressure effect. This is why scaffold ties must be designed to resist tension loads, as well as compressive loads.

Wind Can Produce an "Uplift" Force

Wind can also cause uplift forces. In much the same way that an airplane wing creates lift, the wind moving across the deck of a scaffold can cause the plank to blow off if they are not secured. Scaffolds used to enclose a structure with walls and a roof will also experience uplift forces from wind. Any window or door openings could also create internal pressure that must be accounted for in any scaffold design.

Tying

There are many different types of ties to help stabilize scaffold against wind forces. Examples of ties include: anchors and eyebolts, Tube & Clamp, SLTT and SLTTB1. A threaded insert is used in the building or structure to provide a positive-negative, or push-pull, anchor. The most effective tie is the SLTT and SLTTB1. This gives you the negative and positive push-pull with anchors and eyebolts, which are drilled into concrete or masonry joints. The SLTTB1 lag screw type eye bolts can also be screwed into wood.

Scaffold ties must be able to transmit the forces imposed by wind to a building or structure. Federal OSHA regulations set the maximum allowed spacing (vertically and horizontally)

for ties used on scaffolds. This is a minimum standard that should be used only for open scaffold. Placing ties at more frequent intervals will provide more secure scaffold in high winds.

Enclosed Scaffold = Big Sail

An enclosed scaffold will act as a big sail that can catch the wind and be subject to a large horizontal force. Adding mesh or screens will also increase the exposed surface area and will catch more wind. Even materials that are stacked on the deck will increase the surface area, therefore catching more wind.

Enclosed scaffolds must be tied much more frequently than open scaffolds. Any time scaffold is enclosed with either a solid enclosure or with an open mesh or screen, it is best to consult with an engineer who can determine wind force and design a tie system that will work for the particular application. Individual components of the scaffold must also be analyzed. The enclosure will press against the legs, cross braces and runners, which must be capable of resisting wind forces.

Decking on Sidewalk Canopies Must be Tied

Even though they are not very tall, wind factors must also be considered for sidewalk canopies. As with scaffold decks, the decking on a canopy structure must be tied down to prevent uplift. But just tying the deck to the canopy framework may not be sufficient because the weight of the canopy frames or posts may not be enough to counter-weight the uplift on the deck. Tie downs to the sidewalk or pavement may be needed.

Parapets on the top deck and splash walls on the canopy posts are additional considerations in windy conditions because these will expose

the canopy to horizontal wind forces similar to an enclosed scaffold. Any time a parapet is installed on a canopy, the structure must be tied into a wall or guyed to resist the wind loads.

Suspended Scaffold:

Take Extra Precautions

Suspended scaffold platforms are particularly susceptible to wind. Since they are hung on tall buildings, the exposure to wind is virtually guaranteed. As wind (moving air) hits a wall, it must move around the wall. It may go over, around or down, creating downdrafts, updrafts or swirling winds that can blow the suspended platform around.

If wind and/or severe weather are expected, the best solution is to lower the platform to the ground and secure it.

Since wind can pick up unexpectedly, platforms should be lowered after each shift and secured. Any type of overhead canopy or enclosure on a suspended platform is cause for concern during windy conditions. Even moderate winds will catch the platform and cause it to swing and twist. Extra precautions must be taken in these cases.

Consult Safway's Knowledgeable Resources

You never know which way the wind will blow or when it will cause severe damage. When windy conditions or severe weather become factors, use the resources available to you at Safway:

- **A Competent Person must determine when it is safe to work on scaffolding during windy conditions or severe weather.**
- **Consult an engineer whenever scaffold is to be enclosed, even with mesh, or when a canopy has a parapet or splash wall.**

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