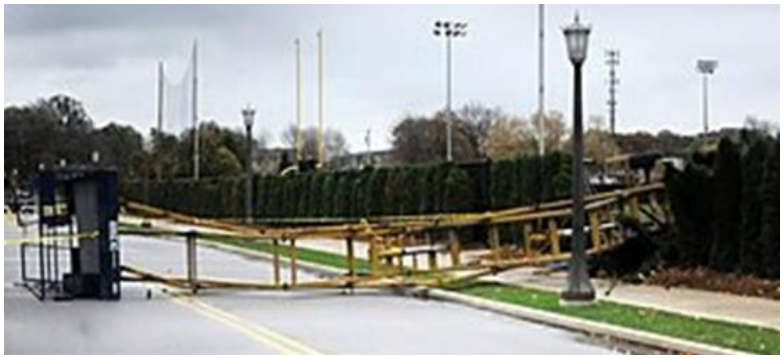
Mobile Elevating Work Platforms (MEWPS)
The Effect of Wind and Side Forces

Introduction

Mobile Elevating Work Platforms (MEWPs) can be subject to side forces. The predominant side forces are those arising from wind and manual forces (e.g. pushing or pulling). This guidance note outlines the factors that should be considered to reduce the effects of these factors to limits specified by the manufacturer.

Wind Forces

- All MEWPS must have the maximum wind rating clearly marked on the machine; this information can be found on the data /compliance plate, the operators manual and safety decals which are fitted to the machine. The MEWP must never be operated outside the maximum limits set by the manufacturer.
- It is important to note that some MEWPS are only designed to work indoors I.e. no wind, additionally some manufacturers will restrict the number of occupants on the unit when it does work outdoors. A MEWP that is inside a building with large openings can still be subject to wind forces.
- The wind force also increases in proportion to the square of the speed. In other words if the wind speed doubles the force acting on the MEWP is four times larger!
- Building cladding, sheet materials, panels and other such materials can act as sails and make a MEWP more likely to tip over, especially in gusty conditions. For the same reason, never attach signboards, banners and the like to the platform, even if it is for a short time. Be aware that high buildings can funnel wind, which can cause high winds even when wind speed in open areas is low. This can even happen indoors in large warehouses, aircraft hangers and high rise buildings. Local wind speeds can be increased by things like aircraft slipstreams at airports and high-sided vehicles on motorways.
- Wind is a major hazard when it comes to MEWP operation. Generally, the velocity (speed and direction) of the wind will increase as elevation increases and can be amplified around obstructions such as buildings (funnelling effect).
- It is very important to realise that wind speed can increase with height and may be 50% greater at a height of only 20 metres above ground level. Though a MEWP and its occupants may initially be sheltered at low level, as the MEWP elevates above the surrounding buildings, structures and even through the tops of tree canopies, it will be exposed to a higher strata and the full force of the wind.



Measuring Wind Speed

An anemometer is an accurate way of measuring wind speed.
The device should be open to the wind and checked at regular intervals as you elevate.

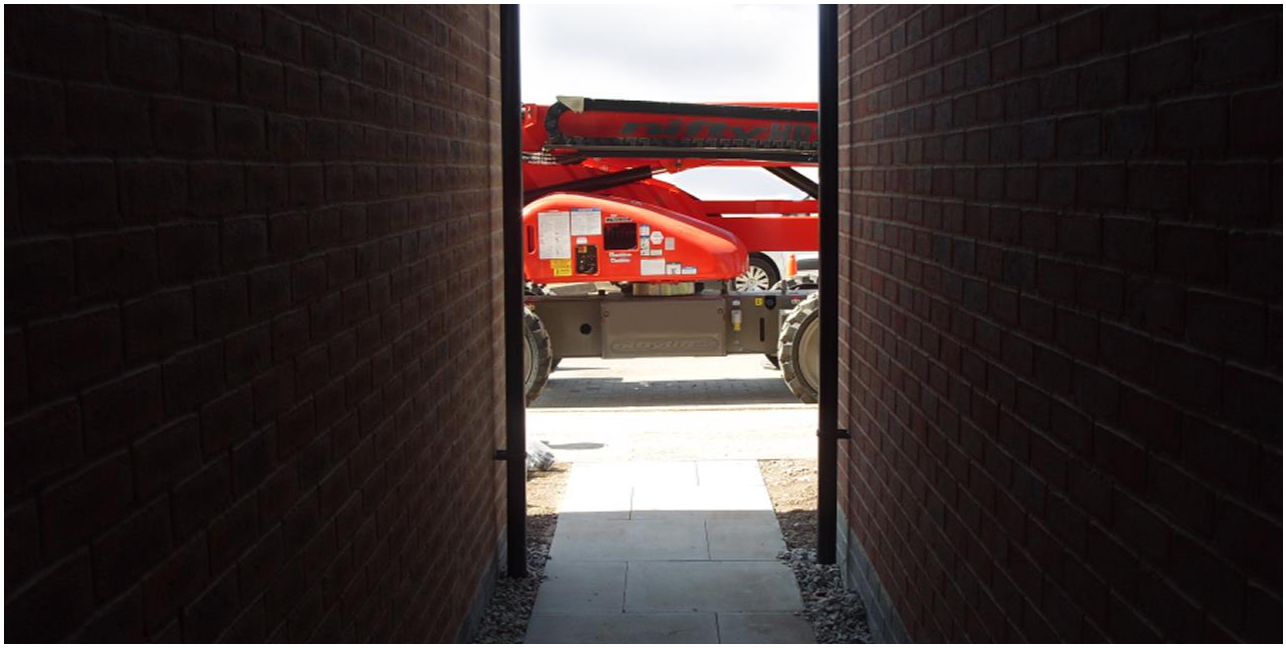
The Beaufort scale is only a guide so you can estimate the wind speed using visual aids. The Beaufort Scale is not accurate.

BEAUFORT SCALE

Force		Anemometer reading mph	kmh	m/s	knts	Description	
0	○	0-1	<1	<0.3	0-1	Calm; smoke rises vertically.	Calm
1		1-3	1-5	0.3-1.5	1-3	Direction of wind shown by smoke drift, but not by wind vane.	Light air
2		4-7	6-11	1.5-3.3	4-6	Wind felt on face; leaves rustle; ordinary vanes moved.	Light Breeze
3		8-12	12-19	3.3-5.5	7-10	Leaves and small twigs in constant motion; wind extends light flag.	Gentle Breeze
4		13-18	20-28	5.5-8.0	11-16	Raises dust and loose paper; small branches are moved.	Moderate Breeze
5		19-24	29-38	8.0-10.8	17-21	Small trees in leaf begin to sway; crested wavelets form on inland waters.	Fresh Breeze
6		25-31	39-49	10.8-13.9	22-27	Large branches in motion; whistling heard in telegraph.	Strong Breeze
7		32-38	50-61	13.9-17.2	28-33	Whole trees in motion; inconvenience felt when walking.	Near Gale
8		39-46	62-74	17.2-20.7	34-40	Breaks twigs off trees; generally impedes progress.	Gale
9		47-54	75-88	20.7-24.5	41-47	Slight structural damage occurs (chimney-pots and slates removed).	Severe Gale
10		55-63	89-102	24.5-28.4	48-55	Seldom experienced inland; trees uprooted; considerable structural damage occurs.	Storm
11		64-72	103-117	28.4-32.6	56-63	Very rarely experienced; accompanied by wide-spread damage.	Violent Storm
12		73-83	≥118	≥32.6	64-71		Hurricane

Funnelling Effect

On days where the wind is strong, MEWPs should not be operated between gaps in buildings or structures where those winds can be funnelled and concentrated, whipping up turbulent forces that have the potential to destabilise an exposed MEWP. Caution should also be taken when operating MEWPs near to aircraft slip streams at airports and high sided vehicles on roads and motorways.



The Sail Effect (Side Force Caused by Wind).

Extreme care must be taken when objects are placed or affixed to the basket of a MEWP. Large flat surfaces can act like a sail and can potentially have an adverse effect on the machine. Any accessories must be approved by the MEWP Manufacturer.

Manual Side Force

- Side force is the maximum allowable sideways force (push or pull) which can be applied to or from the platform.
- Side force is applied when conducting tasks such as drilling or pulling cables.
- The manufacturer will specify the maximum allowable side force for the machine on the compliance plate, the unit of measurement for force is in Newtons. (10N -1kg).
- Generally the side force allowed is 200N for one person and 400N for two or more people.

Side force 400 Newtons

Installation of mesh protection on baskets and handrails

Fitting mesh panel to the guardrails of baskets on mobile elevating work platforms (MEWP's) is sometimes seen as an effective solution to preventing the fall of tools or materials from the platform. The Association has become aware that some construction sites demand that mesh guarding is fitted as a prerequisite to access to the site.

The fitment of mesh panels, screens or other protection will increase wind loads and may affect the stability of the MEWP and its strength. On some platforms the increase in wind load could be considerable.

Manufacturers may offer mesh guards as a standard option for fitment to the work platform and these should always be the preferred choice. Where a work platform is not supplied with suitable protection the end user should consult the supplier or manufacturer.

End users are advised against fitting mesh guarding without approval as strength, Safe Working Load and particularly stability of the MEWP may be affected. In some instances fitment may be considered to be a notifiable alteration to plant design and must be submitted to the relevant WorkCover Regulator.