


To insure Portable Horse Stalls are secured they must be anchored to the ground. The choices you have are an anchor system or the use of counterweights. Typically you want to prevent the one in ten year wind storm to prevent one of the these four possible failures:

1. Structural Failure
2. Uplifting Failure
3. Overturning Failure
4. Sliding Failure

See chart on following page

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# Wind Load Analysis for Portable Stalls

1) When there is no anchorage and counterweight, only the self weight of the horse stall will contribute to stability under the wind load. The Sliding Failure is more critical than overturning and uplifting. However, on rough surfaces, the overturning failure mode will govern.

2) Although sliding governs all of these failures, it is easy to deal with its occurrence by choosing rough surfaces or offering small anchorages. Therefore, overturning is the most likely failure mode. The allowable wind load without anchors is only 67.8 km/h or 42.1 mph. This wind load however is smaller than the 1 in 10 year wind pressure in most areas. For example in Alberta [Cardston] the wind velocity is 121.7 KM/hr [75.6 mph].

3) You have the choice of using ground anchors or counterweights. If you choose ground anchors, these are readily available at most home improvement or hardware locations. These anchors are to be located at each stall connection. If you choose to use counterweights, these are located at each end of your stall setup as well as every 50 feet [every 5 stalls] and repeat on the opposite side of the setup.

## Use the following chart to determine your site requirements

<b>Wind Velocity [km/h]</b>	<b>70.0</b>	<b>80.0</b>	<b>90.0</b>	<b>100.0</b>	<b>110.0</b>	<b>120.0</b>	<b>121.7</b>
<b>Wind Velocity [mph]</b>	<b>43.5</b>	<b>49.7</b>	<b>55.9</b>	<b>62.2</b>	<b>68.4</b>	<b>74.6</b>	<b>75.6</b>
<b>Tension for each anchorage [kN]</b>	<b>0.21</b>	<b>1.09</b>	<b>2.10</b>	<b>3.22</b>	<b>4.46</b>	<b>5.81</b>	<b>6.05</b>
<b>Tension for each anchorage [Lb]</b>	<b>47</b>	<b>246</b>	<b>472</b>	<b>723</b>	<b>1002</b>	<b>1307</b>	<b>1361</b>
<b>Counterweight [Kilo]</b>	<b>64</b>	<b>335</b>	<b>642</b>	<b>984</b>	<b>1363</b>	<b>1778</b>	<b>1852</b>
<b>Counterweight [Lbs]</b>	<b>142</b>	<b>739</b>	<b>1415</b>	<b>2170</b>	<b>3005</b>	<b>3920</b>	<b>4084</b>

All the above values use a Safety Factor S.F. = 1.5