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Scaffold Technical Support

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How to Calculate Scaffold “Leg Loads”

The first step into Scaffolding Design

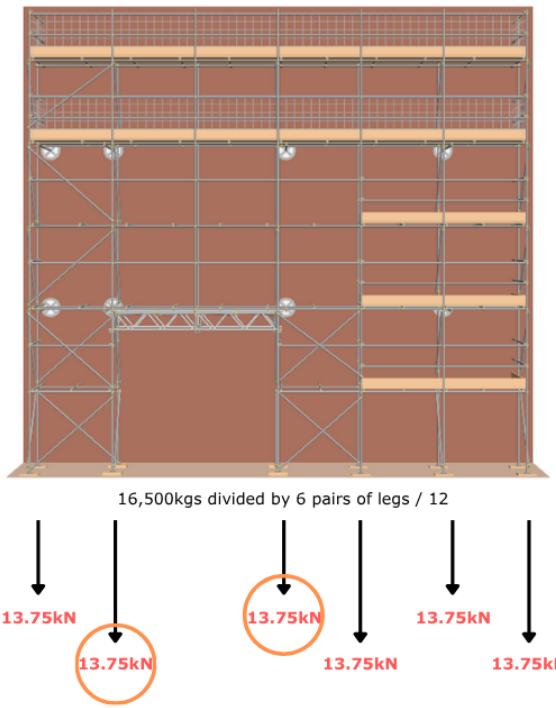
Scaffold designs in Britain all follow 2 basic principles:

1. They are built around **NASC** TG guidance notes.
2. They MUST be created to take far beyond the loading impacts that are potentially going to be applied to the scaffold - a term one might call “over-engineering the structure”.

And there are 3 types of loading impacts to consider:

1. **Dead Loads** are the standard loads applied that take into consideration the total weight of the structure - Tubes, Boards, Fittings, the lot, and is fairly easy to calculate if you know what kind of scaffold you need / the materials used within.
2. **Live Loads** are a little more difficult to calculate and have a huge amount of variation. These are the weights (and taking into account potential movement) of the workers using the scaffold along with the materials, tools and equipment they’re using when working, which could add tremendous strain and stress to the structure.
3. **Wind Loads** are the forces imposed onto the structure from exposure to the wind / elements.

*Image used from current ePortal “Compliance Sheet”, owned by NASC



“**Leg Loads**” are 2 of the most important calculations to get right (most of the time) due to the “legs” / Standards usually taking the entire combined load of nearly every scaffold structure, to one degree or another, with the other being Tie Loads.

Dead + **Live** + **Wind** = **Total Load**
Of course, as mentioned above, the Live Load needs to be overestimated and usually where the over-engineering-part comes into play, and Wind Loads, which are impacted by the Scaffold Ties are not always a certainty, with the scaffolds location and if its cladded, or not needing to be considered.

Then use the following formula:
Total Load (**TL**) multiplied by the implied Global Safety Factor (**GSF**) of 1.65 “just encase” divided by the number of legs (**NoL**).
... for example:
If the **TL** is 10,000kgs, multiplied by a **GSF** of 1.65 = **16,500kgs**
16,500kgs divided by **NoL** 12 **= 1,375kgs, or 13.75kN** (KiloNewtons) per leg.

Although, some legs may have a slightly increased loadings due to “**Load Transference**” like the ones either side of the Beamwork in the diagram ◯ ... or even where the fully Boarded “Ladder Stage” is, due to the extra weight of each section.
All in all, having the details, number or email addresses of a couple of decent **Scaffold Designers** would be the best way to get accurate loadings and calculations for your scaffold structures.

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