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Michal joined MEICON project in March 1st 2018. Since then he extended **Global Floor Loading Codes** survey to cover 54 countries with a population of 5.5bn (77% of global population in 2013 – previous survey covered 3.95bn – 55% of global population). 52% analysed population lives in cities. The average minimum characteristic area load (excluding partitions) assembled from design codes was found to be at a lever of 2.19kN/m² whereas maximum average 3.42kN/m² (see: <https://bit.ly/2JmNx9d>).

At the same time, based on **Lettings Agency buildings specification**, rentable area of 95 office buildings responsible for 6.3M square metres was analysed (previous study covered 5.9M square metres). Office buildings are located in: London, Washington, NYC, Boston, Toronto, Houston, Denver, Calgary, SF, LA, Sydney, Perth. A weighted average imposed load excluding any allowance for partition was found to be 3.58kN/m² with partition load 4.20kN/m². For 28 office buildings in **London** with total floor area of 0.8M square metres weighted average of imposed load excluding any allowance for partition was found to be 3.33kN/m² and 4.28kN/m² including partition load (see: <https://bit.ly/2xVh58D>). Therefore based on analysed case studies it can be found that imposed load is usually taken twice as large as minimum average.

It should be noted that Lettings Agency buildings specification do not give an access to the real design values but show only a lower boundary.

Based on conducted interviews with structural engineers and Hume and Miller (<https://bit.ly/2y1oaoi>) it might be found that common situation is to design an office space for imposed load “four plus one”, being “four” for medium term variable action of occupancy and “one” for long-term variable action of demountable partitions (5kN/m²). That value is very close to historical values introduced in 1909 at London County Council (General Powers) Act: “For a floor intended to be used wholly or principally for the purpose of an office or a counting house or for any similar purpose one hundred pounds per square foot of floor area” (superimposed load = 100psf = 4.88kg/m² = 4.788kN/m² ~ 20 cement bags (500 kg) 10002.31 lbs (/m²) = 4.9kN/(m²) – see Photo 1.

Using this methodology, we can venture to say that office buildings are usually designed for imposed load equals to 20 cement bags placed on every office square metre or fully filled with 2 Land Rovers Discovery II Td5 arranged one on top of the other – see Photo 2.

Next steps of the project is to find how imposed loads are accepted during designing processes and if those values are reached during all building life. Part of research is to find what is an influence of higher live loads on material efficiency and what is an origin of historical live load values. Based on on-line survey conducted in summer 2017 and interviews with Structural Engineers we would like to find more information about design processes and whether energy/material efficiency is important in design decisions.



Photo 1: Michal with 1 cement bag ($=1.32\text{kN}$) and 20 cement bags ($=4.9\text{kN}$) (photo: Michal Drewniok, source: <https://bit.ly/2sRzOw6>)

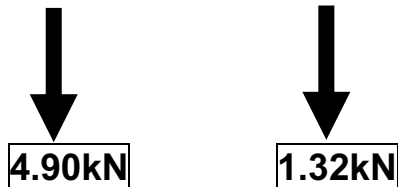


Photo 2: 2 Land Rovers Discovery II Td5 ($=2 \times 2.45\text{kN/m}^2 = 4.90\text{kN/m}^2$) (source: https://en.wikipedia.org/wiki/Land_Rover_Discovery)

