



Proper Loading of A-Frames

July 29, 2016

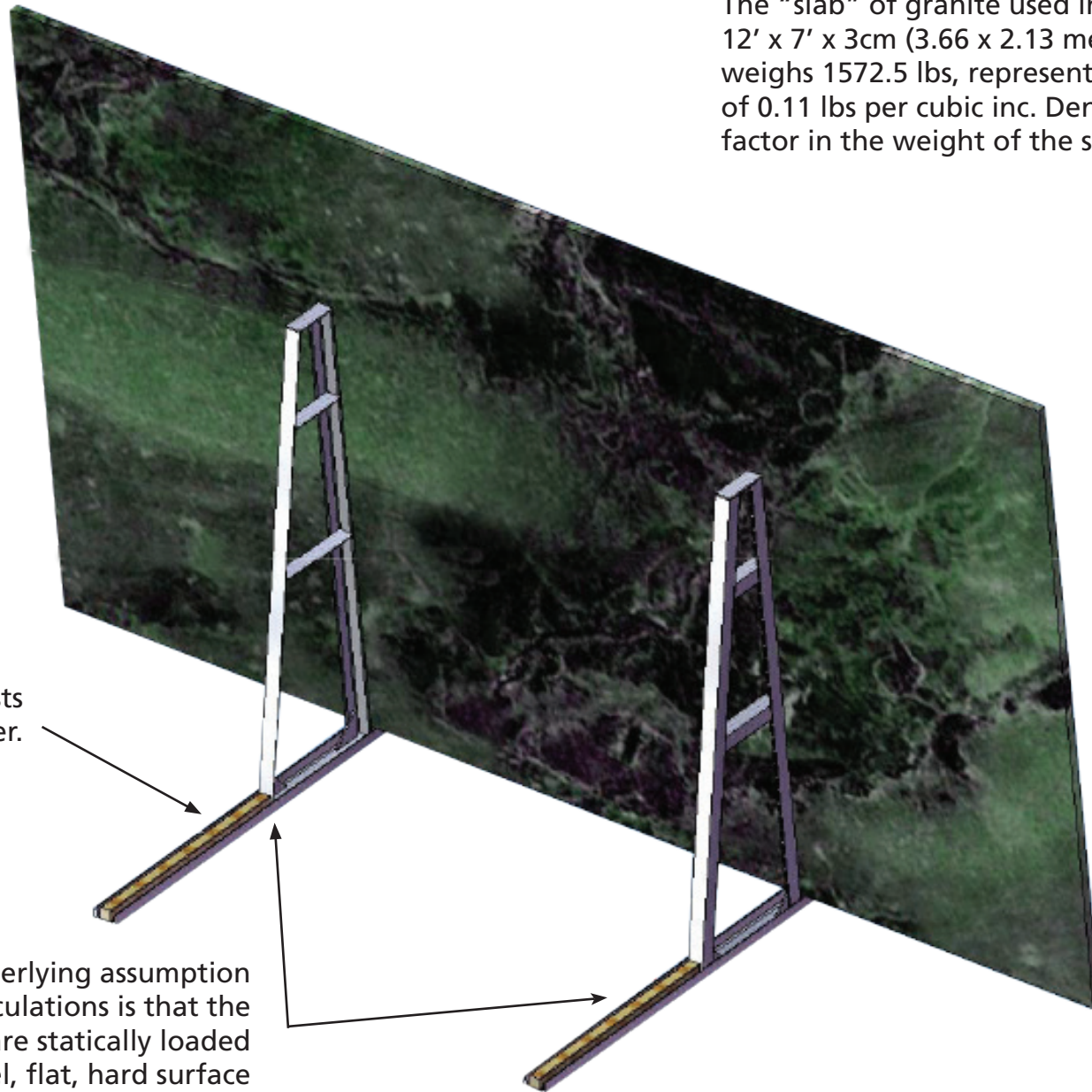
A-Frames Loaded Normally with 1 Granite Slab (Max Size) - ISO View

The A-Frame design analyzed in this report includes this top bar. A-Frames fabricated without this are **not as strong.**

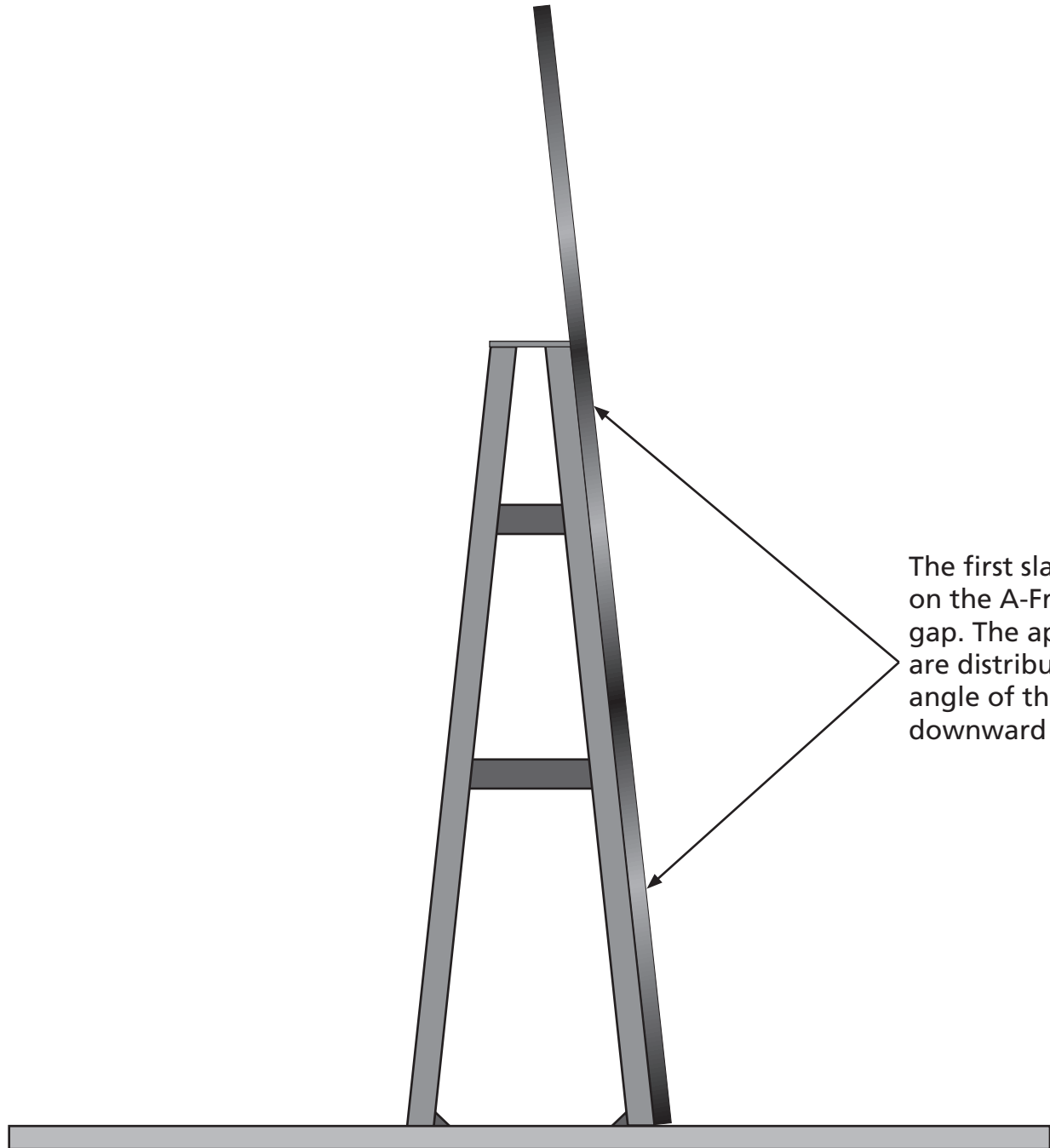
The "slab" of granite used in this study is 12' x 7' x 3cm (3.66 x 2.13 meters) and weighs 1572.5 lbs, representing a density of 0.11 lbs per cubic inc. Density is a factor in the weight of the slab.

The bottom of the slabs rests on lumber.

An underlying assumption in all calculations is that the A-Frames are statically loaded on a level, flat, hard surface and they are used in pairs. Any other conditions may nullify the results of this report



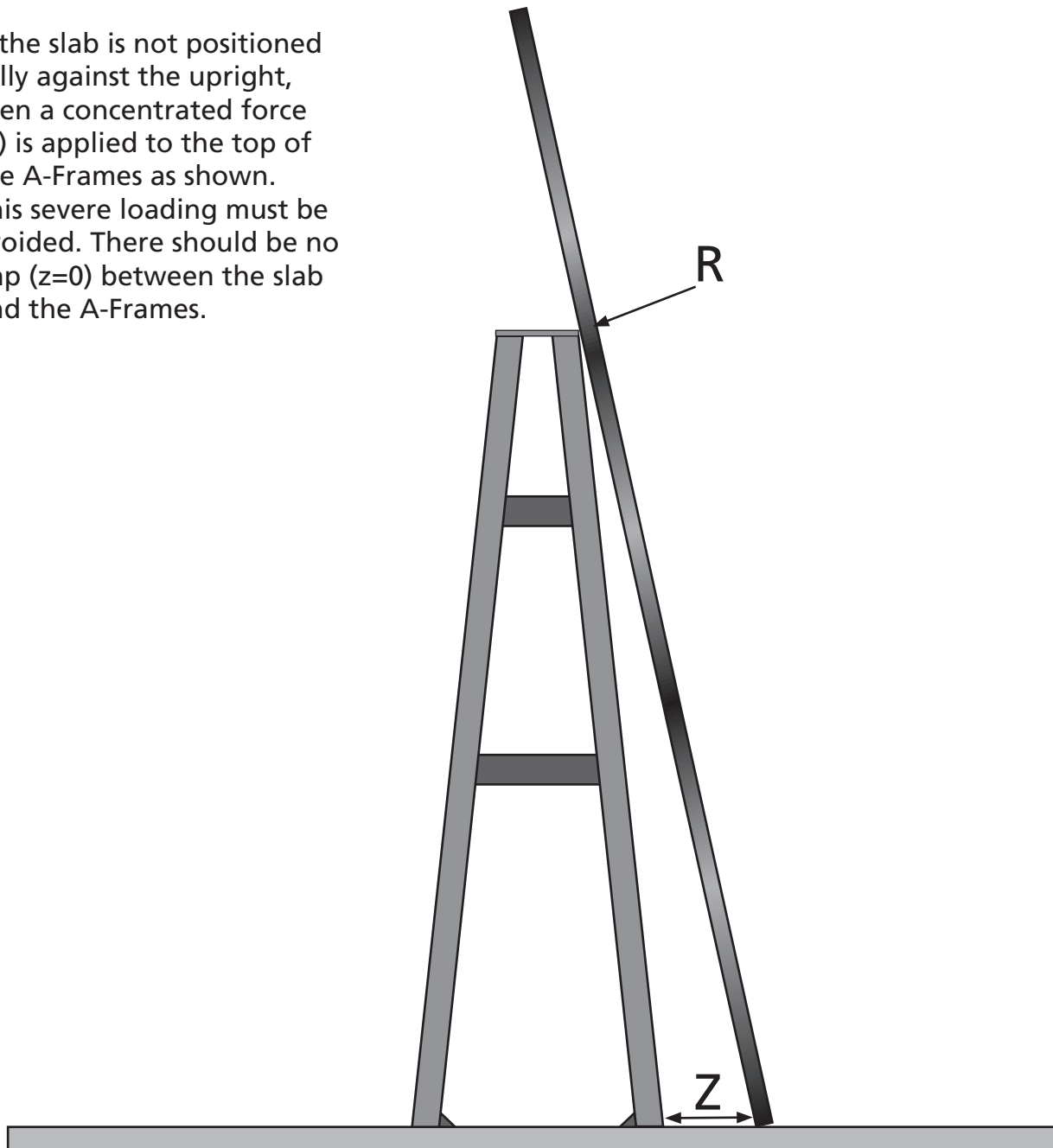
A-Frames Loaded Normally with 1 Granite Slab (Max Size) - Side View



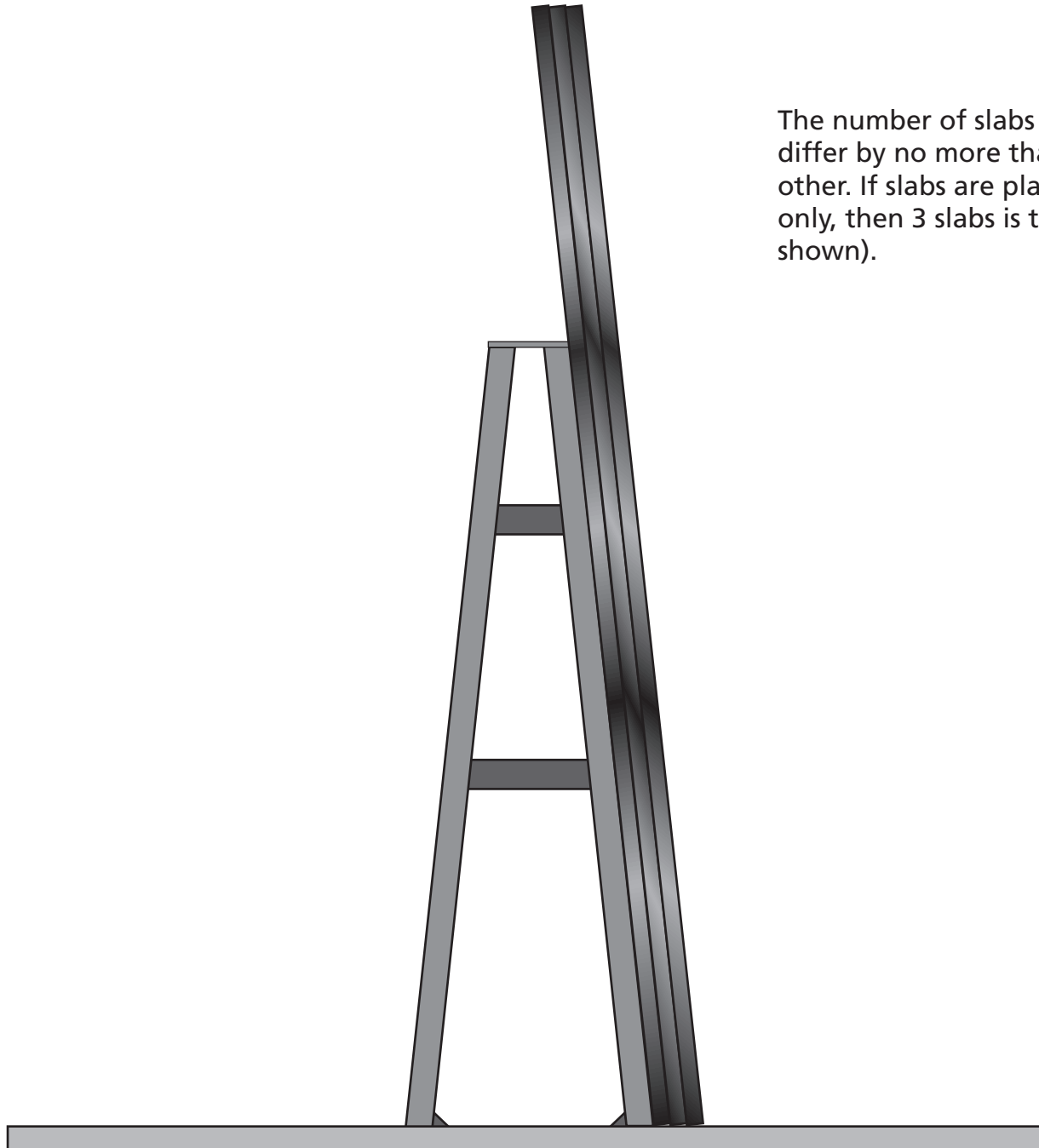
The first slab should be positioned on the A-Frames as shown with no gap. The applied forces of the slab are distributed along the structural angle of the A-Frames - and also downward on the channell portion.

A-Frames Loaded Improperly with 1 Granite Slab (Max Size) - Side View

If the slab is not positioned fully against the upright, then a concentrated force (R) is applied to the top of the A-Frames as shown. This severe loading must be avoided. There should be no gap ($z=0$) between the slab and the A-Frames.



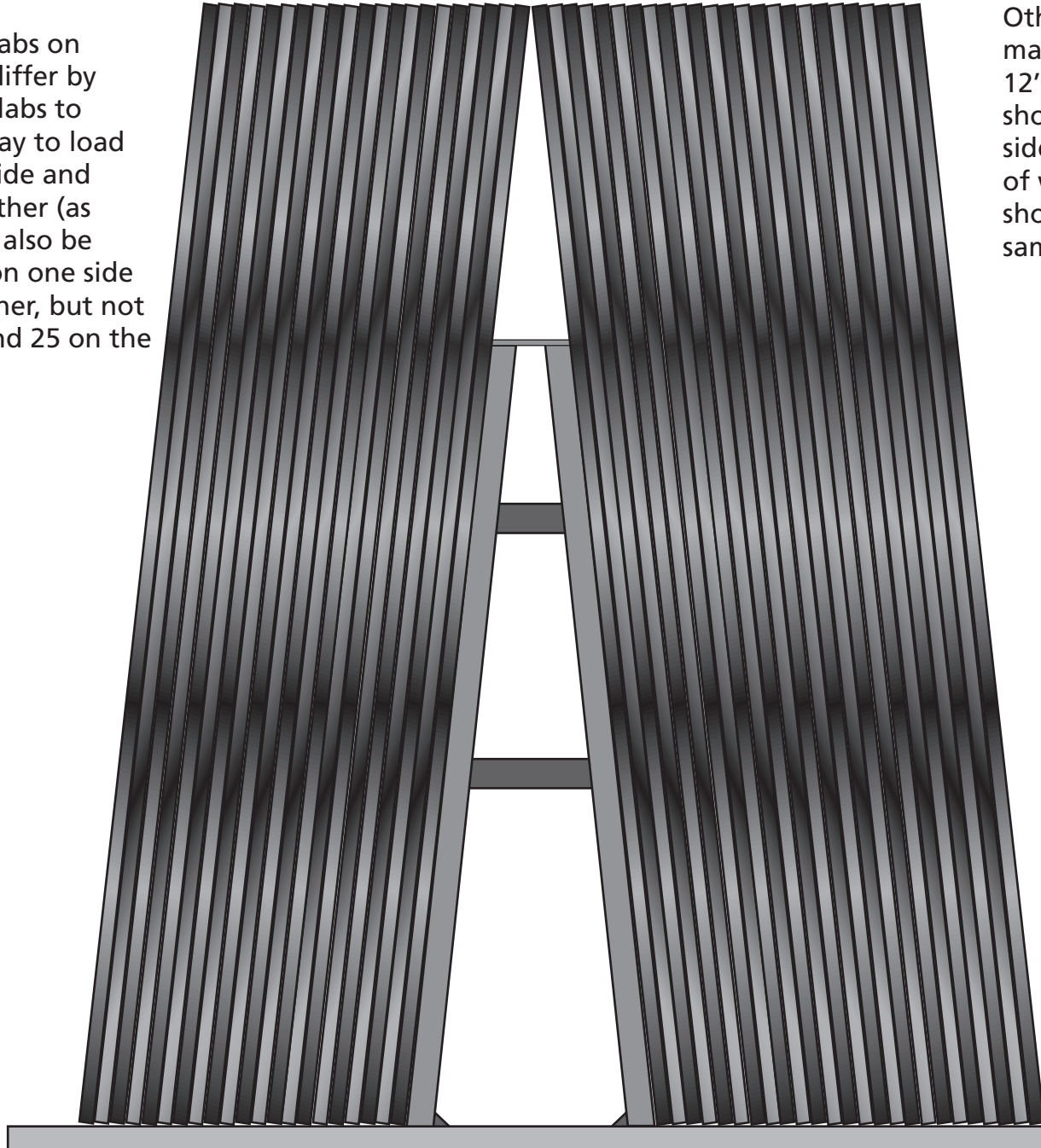
Maximum Safe Loading of A-Frames - Example #1



The number of slabs on one side should differ by no more than 3 slabs to the other. If slabs are placed on one side only, then 3 slabs is the maximum (as shown).

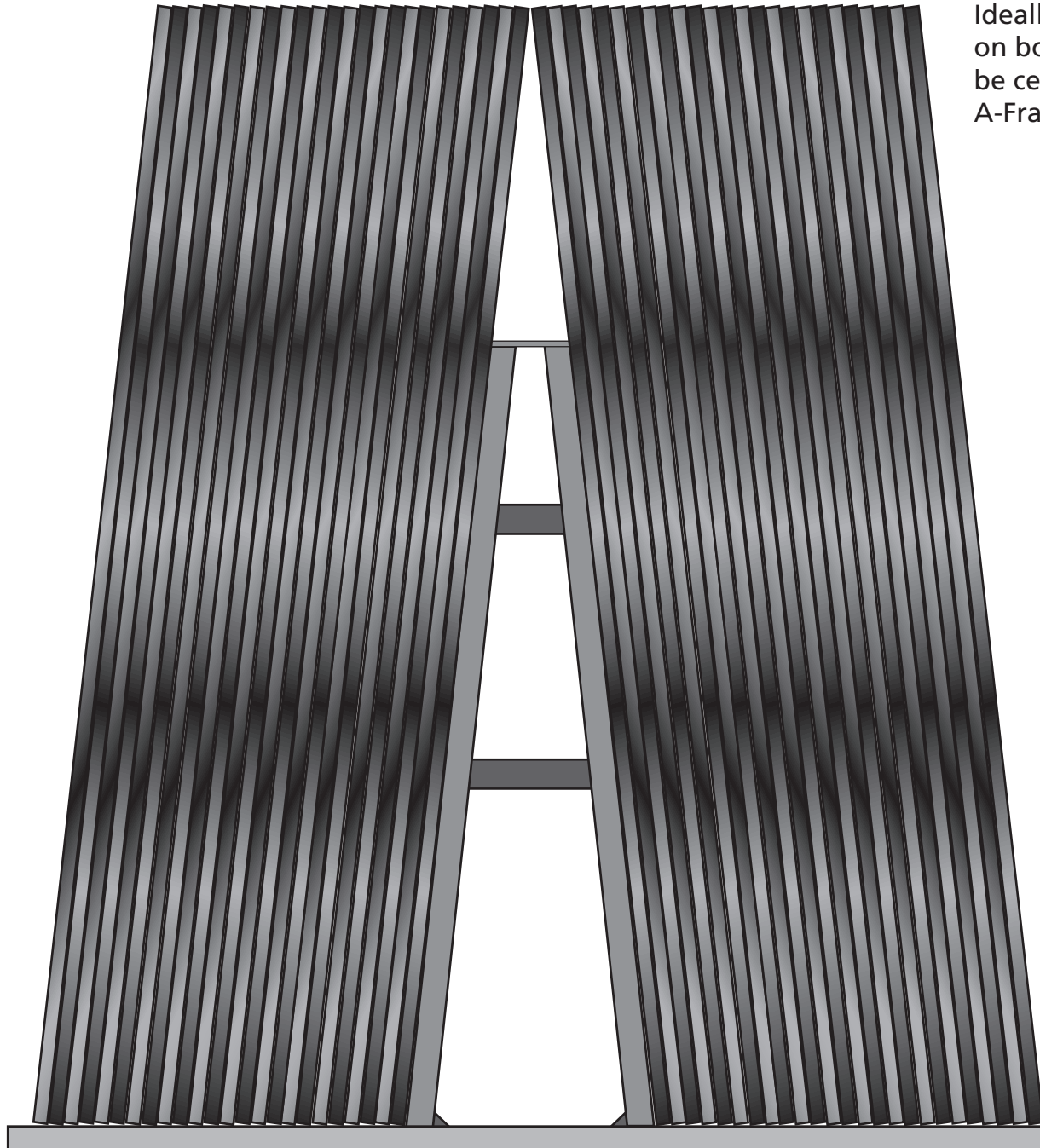
Maximum Safe Loading of A-Frames - Example 2

The number of slabs on one side should differ by no more than 3 slabs to the other. It is okay to load 22 slabs on one side and 25 slabs on the other (as shown). It would also be okay to load 23 on one side and 25 on the other, but not 21 on one side and 25 on the other.



Other than the difference of 3, which may include slabs of any size up to 12' x 7' x 3 cm, the remaining slabs should be evenly matched on each side of the A-Frames - that is, a slab of whatever dimensions on one side should have a counterpart of the same dimensions on the other side.

Maximum Safe Loading of A-Frames - Example #3



Ideally, the A-Frames are loaded evenly on both sides. Also, each slab should be centered (front to back on the two A-Frames).