

07 June 2023

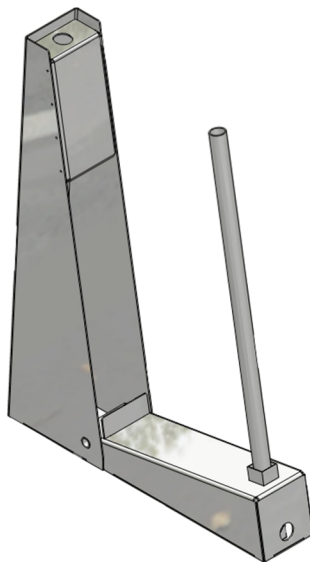
Matt Hutchinson  
Matricks Innovation Ltd  
PO Box 302025  
North Harbour  
Auckland 0751

Dear Matt

**Stand-IT Vertical Panel Storage Device Structural appraisal.**

Mitchell Vranjes Consulting Engineers (MVCE) have been engaged to structurally review the Stand-IT Vertical Panel Storage Device on behalf of Matricks Innovation Ltd.

The Stand-IT is a stand designed to vertically-store materials/sheets for ease of use and to support the material/sheets in a safe manner.



**STAND-IT STAND**

The Stand-IT is designed to be a fold-up unit with the vertical and horizontal assemblies connected via swivel tube. The unit is made from Marine-grade Aluminium with all section sizes 3mm thick. All connections on the unit are either welded Aluminium folded together or rivetted connections. A round aluminium removable tube is socketed into the lower section of the stand.

The Stand-IT is designed to be used in pairs to store 2.4m long by a maximum 1.4m wide materials/sheets, with the total volume of material to be less than 500kg per stand.

If storing materials/sheets that are longer than 2.4m, an extra unit should be used per additional 1.2m length – i.e., 3 units for up to 3.6m length, 4 units for up to 4.8m length, and so on.

The geometry of the Stand-IT unit is such that even when loaded with 1 sheet of material or completely loaded, it is at static equilibrium and requires a significant unbalancing force for it to uplift at the heel or toe of the stand.

Mitchell Vranjes have been involved in both desktop analysis and actual full-scale testing of the Stand-IT units.

Testing was undertaken with a calibrated spring balance rated to 300kg. 17mm thick plywood sheets (2.4m long, 1.2m wide, 25kg weight) were used for the purposes of testing.

For various configurations of sheets ranging from 2 sheets up to 22 sheets, testing was undertaken to confirm the magnitude of a horizontally applied load which would be required for the pairs of Stand-IT units to uplift at either the toe or heel.

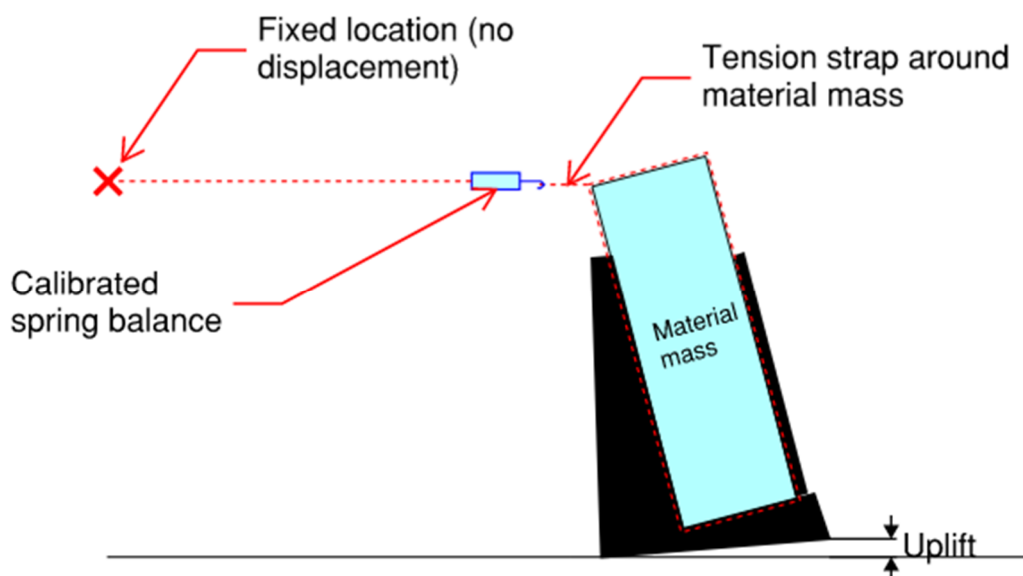
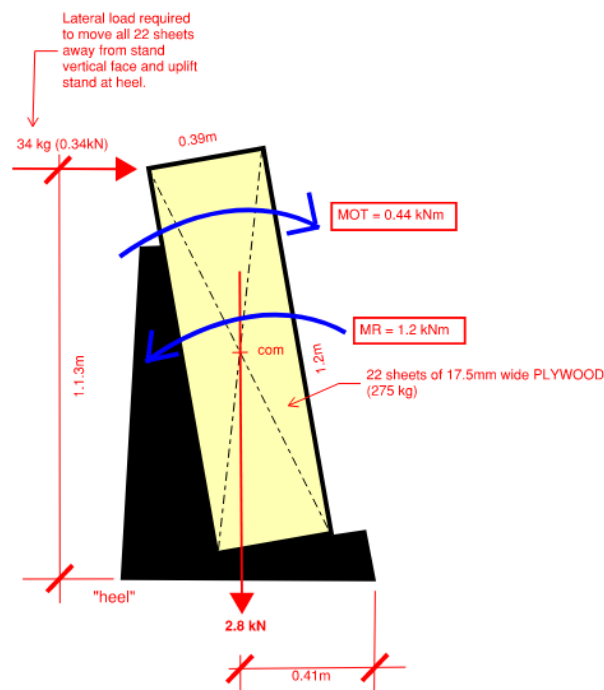
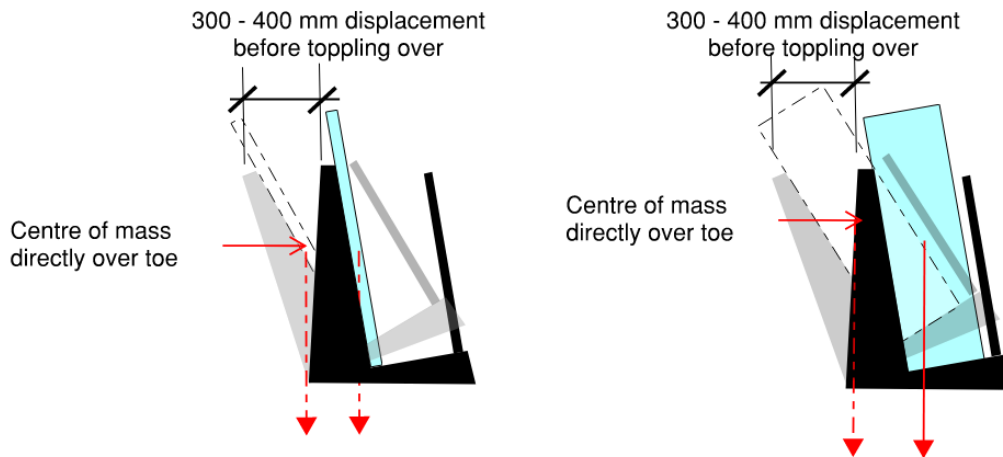


DIAGRAM OF TESTING ARRANGEMENT

Testing and analysis confirmed that when the stand is fully loaded the mobilising load would need to be increased by at least three times for the stand to uplift off the floor and even at this point the geometry was such that a displacement of 300mm - 400mm would be required to unbalance the stand completely.



## LOADING PER STAND

Additional static testing was undertaken with 60 sheets of 3.0m x 1.2m Cementitious board (total mass 1900kg) on 3x Stand-IT devices, at 1200mm c/c spacing with 300mm overhangs at end stands. The force required to initiate overturning of the units exceeded 300kg, and under static loading no measurable deformation of the Stand-IT's leg section was present in either its fully loaded or unladen state.

The central stand was therefore subjected to approximately 900kg which exceeds the SWL of 500kg prescribed.

Design drawings for the original prototypes were produced by SRS Group and are attached to the end of this letter, reference D2916-Z-0001 to 0008

We conclude that the Stand-IT system as outlined in the design drawings referred to above, is fit for purpose provided the following items are adhered to.

- Stand-IT units are centred no more than 1200mm apart.
- A maximum material height or sheet width of 1400mm is used.
- The foundation/flooring the Stand-IT units are to be supported on is level, even and suitably rated to have capacity for an allowable point load of 500kg. This should be verified by a Chartered Professional Engineer if there is doubt.
- The maximum vertical load per unit is 500kg (SWL).
- Materials are not dropped onto the units.
- Materials are stacked evenly and firmly against units face.
- The Stand-IT is not to be used if damaged or buckled or if the unit exhibits any form of distress or loose parts, rivets or broken welds.



Nick Covich

**Technical Director**

B.E. (Hons), N.Z.C.E. (Civil), CMEngNZ, Int PE, CPEng