UNITILE
RAISED ACCESS FLOOR SYSTEMS

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SAFETY FIRST!

Before we know in detail about the Machines & Equipment at the Testing Lab, it is important to know and follow the safety measures to be taken before operating them:

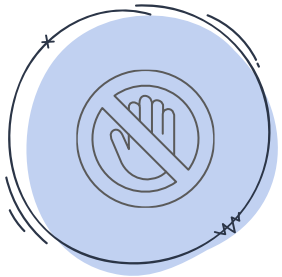
Safety Instructions:



Protective Equipment: Before performing any test procedures, the following personnel protective equipment must be collected and kept ready for use: Gloves, safety goggles, safety helmet and safety shoes.



Earplugs to be used if the person is operating the machine for a longer & continuous period of time.



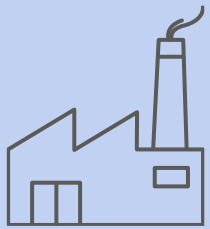
While the machine is under running condition, please do not touch the machine or any other part of the machine

GROUND RULES

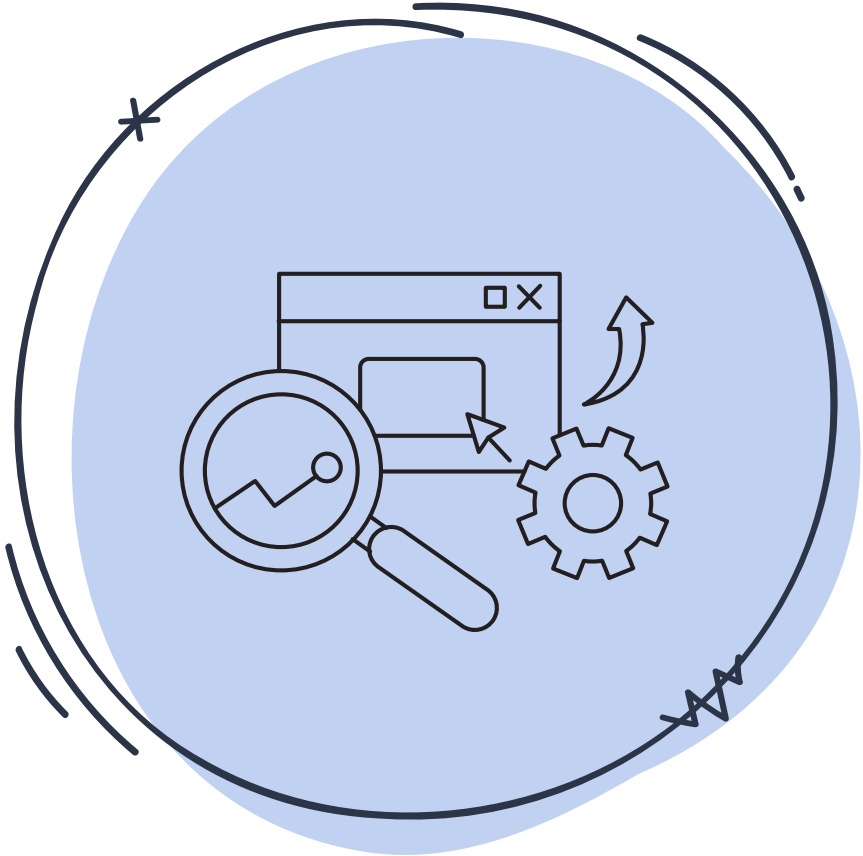
Some general ground rules for machine operations at the Test Lab.

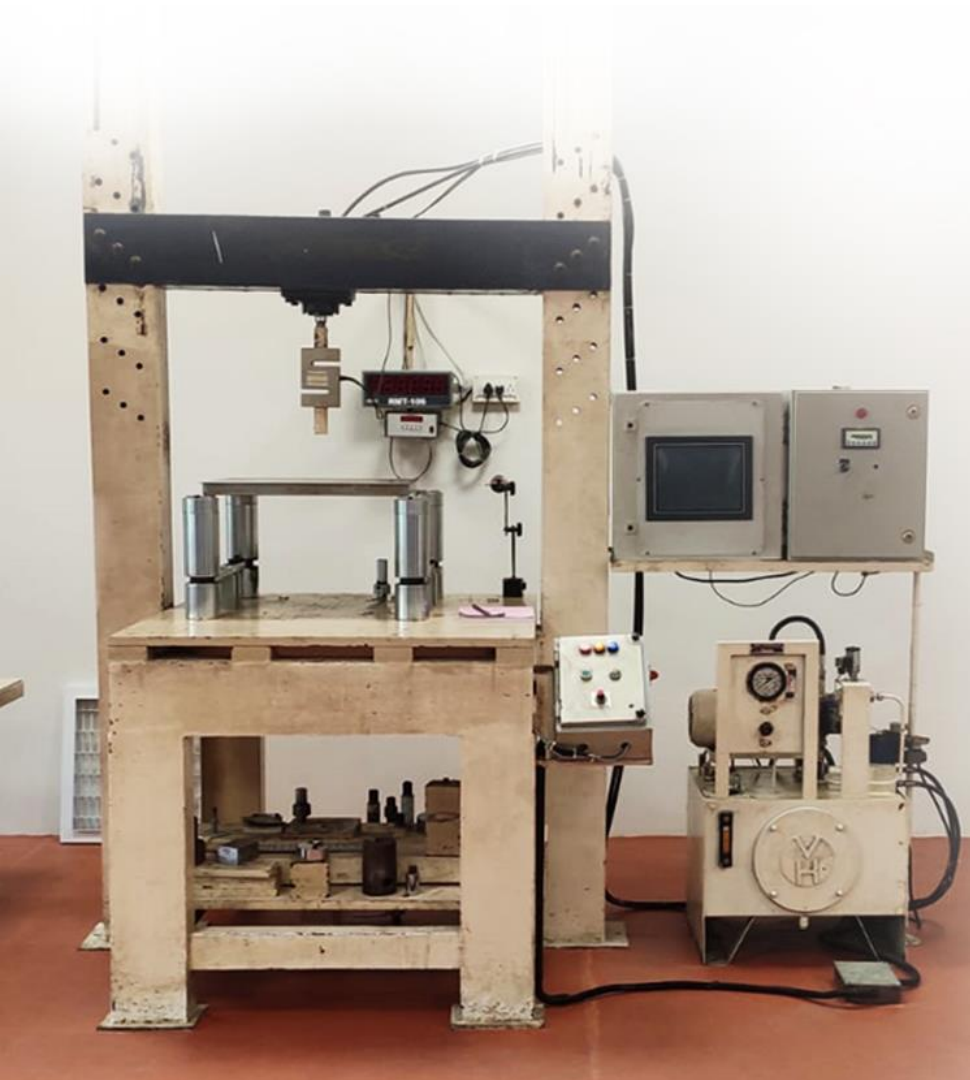
- Prior permission to be taken from the Testing-In-charge or the Testing Supervisor before entering the lab.
- Formal training to taken from the Testing-In-charge or the Testing Supervisor related to the machine safety and operation
- One must read and understand the SOP's and the Machine Operation & Safety Manual
- Machines should be used only under the direct supervision of Testing In charge
- One must acknowledge the "Lab Rules" document with the Testing in Charge
- One must set the sensor to a particular location where they want to set the roller movement before starting the rolling load machine.

If one fails to follow any of the above rules, he will be held responsible for his own safety as well as the damage done to the machine or any subsequent asset loss to the company.



INTRODUCTION
TO EQUIPMENT





UNIVERSAL TESTING MACHINE (UTM)

The UTM is a Hydraulic testing machine. It can be used for different types of Mechanical testing such as Concentrated Load, Ultimate Load Test, UDL, Pedestal Axial Load, Stringer Load (As per International Standard CISCA, PSA MOB PF2 PS, & BSEN 12825:2001 (E) etc.

Loading Capacity: 30.00 KN
Make: VIJAY HYDRAULICS



ROLLING LOAD TEST MACHINE

This Rolling Load Test Machine is used for rolling tests at different phases and with different wheels.

Loading Capacity: 180 to 525 kg.
Make: UOSPL



NUGGET TESTING MACHINE

Model No.: AW82_000_014_00

Sr. No.: 82014/0919/0465

Hydraulic Max. Force: 5 Ton

Make: Arm Welder



SIMULATION LAB

Air flow CFM & Air flow Leakage Test

1. Digital differential pressure gauge
2. Anemometer
3. Retorted blower
4. 110 volt transformer



Soft Body Impact Test



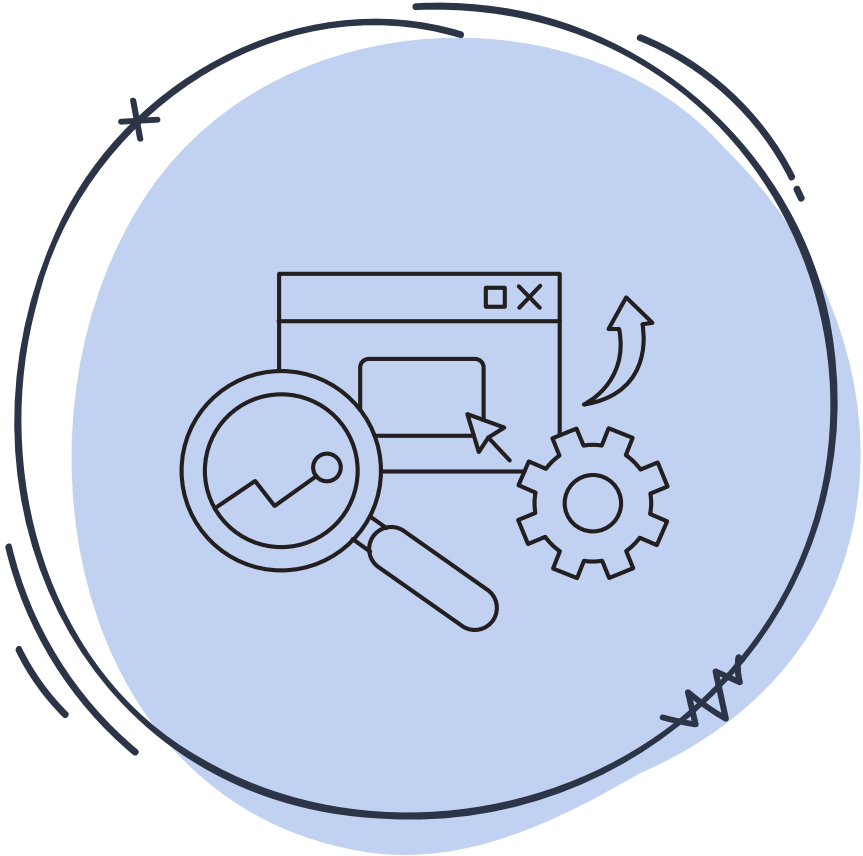
Hard Body Impact Test

IMPACT LOAD TEST EQUIPMENT

(For soft body impact test & hard body impact test)

One panel with four pedestals are to be selected at random. The specimens shall be of the maximum height of the type of system submitted.

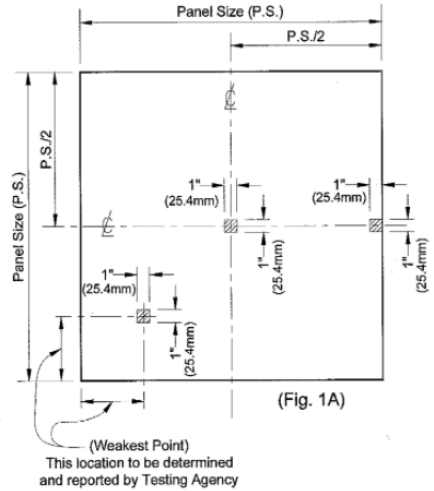
TEST METHODS FOR RAISED ACCESS FLOOR PANELS

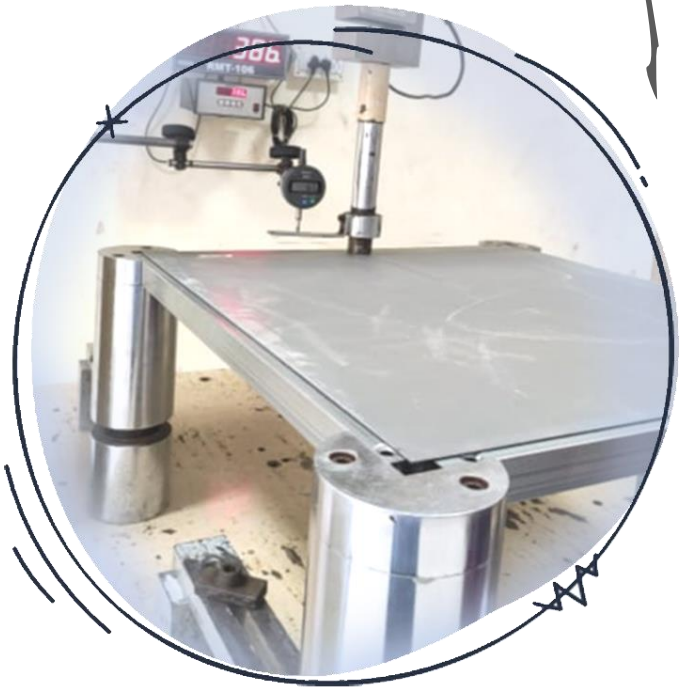


CONCENTRATED LOAD TEST

Purpose: To determine the maximum deflection(s) and permanent set(s) of an access floor under load.

This test helps determine the capability of floor panels of withstanding a concentrated design load top & bottom-surface deflection. The under load should not to exceed 2.54 mm and the permanent set should not to exceed an average of 0.010 inch (0.25) according to CISCA/AF Section 1, “Concentrated Loads”.

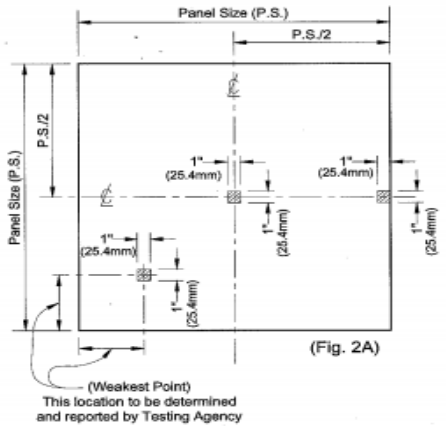


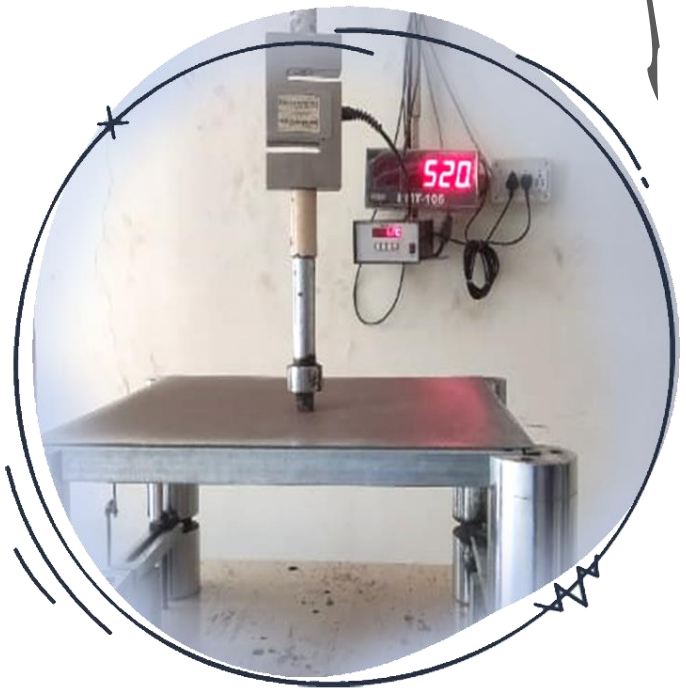


ULTIMATE LOAD TEST

Purpose: To determine the maximum load applied onto the panel without failure.

This test helps determine the capability of the panel withstanding a minimum ultimate load of three times the concentrated load without failing, according to CISCA/AF, Section 2, “Ultimate Loading”.

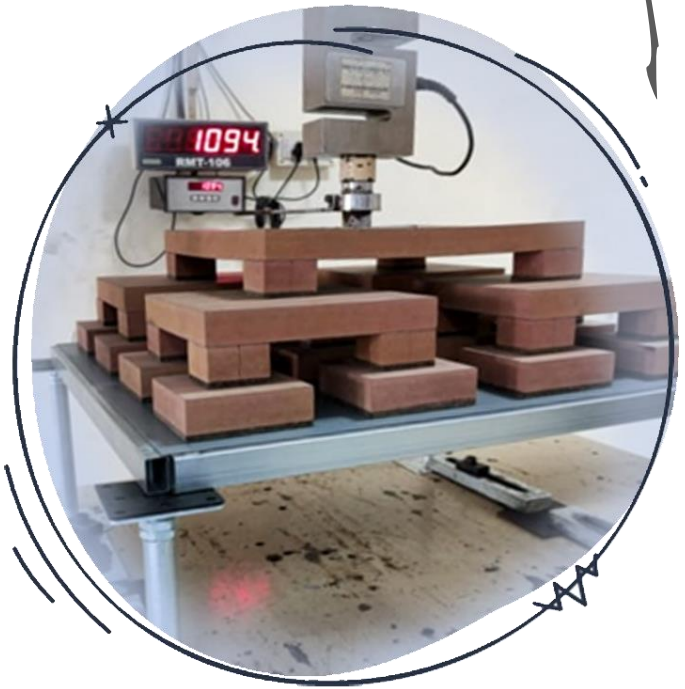




UNIFORMLY DISTRIBUTED LOAD

(AS PER PSA MOB PF2 PS)

- This test determines the structural grade of the panel – Light , medium, heavy or extra heavy and the test load.
- The average environmental conditions over the period of the tests.
- Maximum permitted deflection : 1/ 250 of the span or 2.5 mm whichever is the least.
- Deflection in the system at the center and center of edge of panel after 23 hrs. of loading.
- Difference between D and E at center and center of edge (stability). Maximum 0.02mm
- Residual deflection at the center and center of edge of panel 2 hrs. after the load was removed. Maximum 0.5 mm
- Any other permanent deformation in the system



ROLLING LOADS TEST

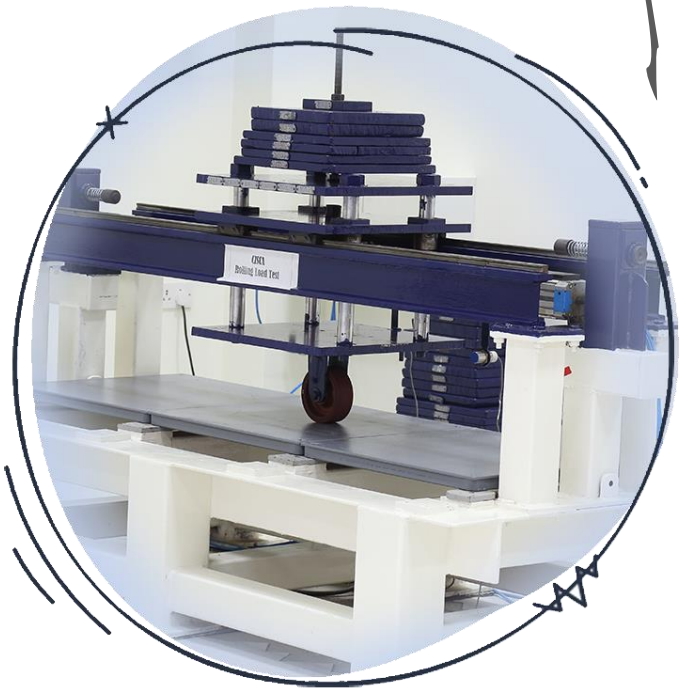
Purpose: To determine the durability and/or deformation of an access floor system when exposed to commercially anticipated caster traffic using a specific load.

This helps in understanding the capability of withstanding rolling loads of the panels in following magnitude, with a combination of local and overall deformation that should not exceed 0.040 inch (1.02) mm after exposure to rolling over CISCA/FA. Path A or B, whichever path produced the greatest top surface deformation, according to CISCA/AF, Section 3, “Rolling Loads”.

Rolling Load Wheel Specifications:

10 pass test: 13 Wheel A - 3” diameter X 1/16” width
(76.2mm diameter X 46.0mm width)

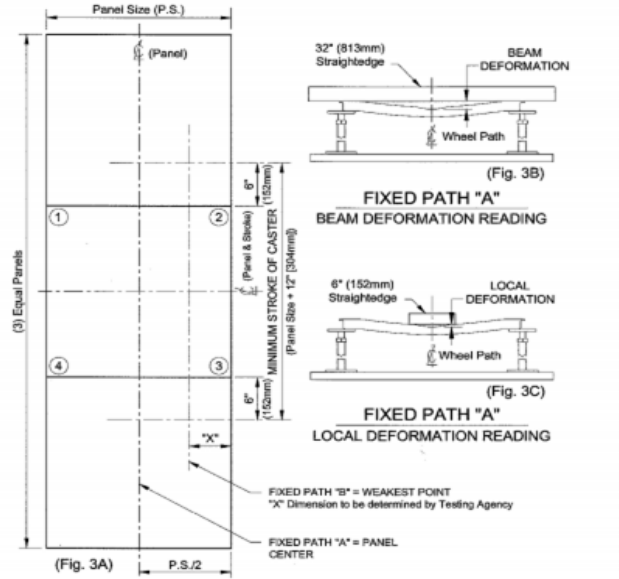
10,000 pass test: Wheel B - For loads up to 1500 pounds (6.675 kN)
6” diameter X 2” width (152mm diameter X 50.8mm width)



ROLLING LOADS TEST

Section 3: Rolling Loads

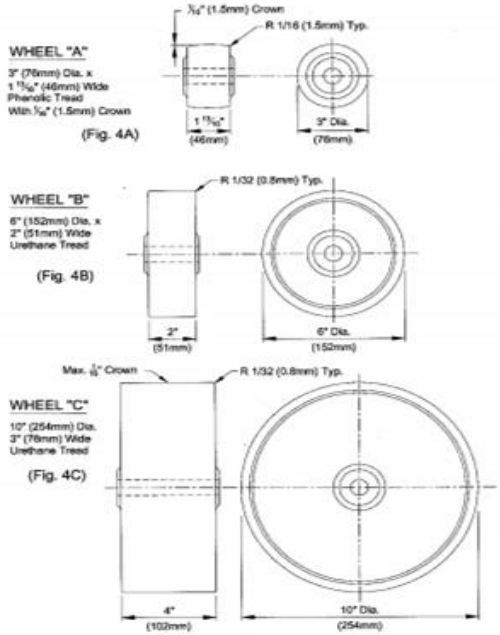
- Fixed Path 1 or 2
- Deformation Readings
- Beam & Local
- Or panel dimension plus 12" (305mm) to length of stroke



SETUP FOR ROLLING LOAD TEST

Section 3: Rolling Loads drawings

- Wheel A
- Wheel B
- Wheel C



STRINGER LOAD TEST

This test checks the capability of the stringer when subjected to a concentrated load of 550 lbf (2447 N) at center span with a permanent set not exceeding 0.010 inch (0.25 mm), as determined per CISCA/AF Section 4, Stringer Load Testing".



PEDESTAL AXIAL LOAD TEST

Purpose: To verify the axial load an access floor pedestal assembly can withstand without structural failure or damage to components inclusive of threads, nuts, collars, etc.

This load can be considered like a point load applied on the pedestal head. For standard pedestal the load applied is 2245 Kgs or 22 KN. For heavy EIL type pedestal the load applied is 2754 Kgs or 27 KN. There should be no deformation in the pedestal after the load is applied.



PULL STRENGTH OF PANEL EDGE STRIP

(As per PSA MOB PF2 PS)

As per standard, the end of each strip will be peeled off for a distance 75 mm. Panel will be mounted as in the image and the strip to be tested on the lower horizontal edge.

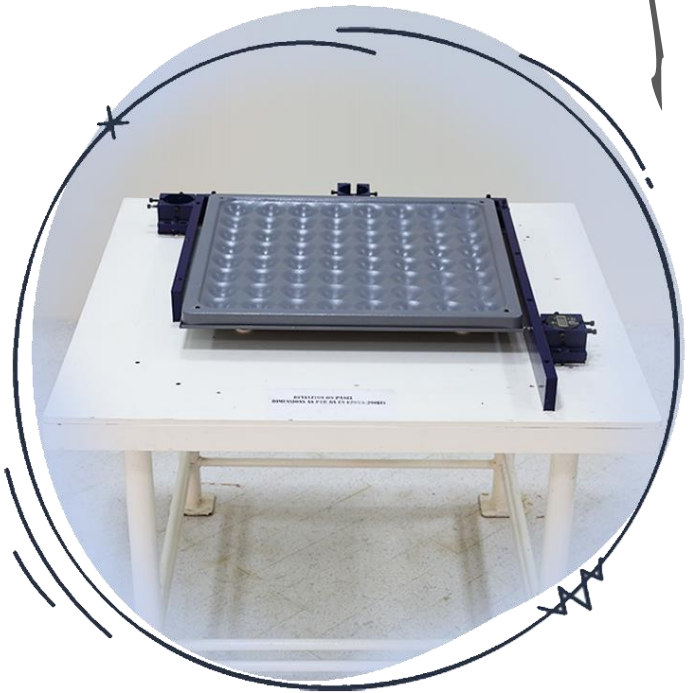
A weight of 0.5 kg shell be attached to the strip and held for 5 minutes. The other three edges will also be tested in similar manner.



DIMENSIONAL DEVIATIONS

The panels of a raised access floor shall be manufactured within dimensions which enables their interchangeability. Deviations of dimensions shall not exceed the values given in Table 3 for one of the appropriate classes.

Identification	Deviation mm	
	Class 1	Class 2
Length of panel sides, see 5.6.3	0,2	0,4
Squareness of panel sides, see 5.6.4	0,3	0,5
Straightness of sides horizontally, see 5.6.5	0,3	0,5
Thickness of panel without covering, see 5.6.6	0,3	0,5
Thickness of panel with coverings*, see 5.6.6	0,3	0,5
Panel twist, see 5.6.7	0,5	0,7
Vertical warping of panels, see 5.6.8	0,3	0,6
Difference in height between perimeter trims and panel surface, see 5.6.9	0,3	0,4
* plus thickness deviation of floor covering only if measured including covering		



PSA MOB PF2 PS (UK)

These specifications are generally followed by UK standards and are popularly applicable for UCB/UCS/UWC series; in our case all wood core or chipboard panels. The safety factor should be 3 times.

STRUCTURAL GRADES

This specification relates to the following structural grades and the manufacturer may offer any type which complies with a particular grade.

The structural grades are divided into 4 grades:

- **Light Grade:** General open office application without heavy equipment
- **Medium Grade:** General open office application where it is expected that heavy office equipment eg. drafting tables etc. will be in use.
- **Heavy Grade:** Standard data centers having less density server racks, small data centers, NOC rooms, Hub rooms etc.
- **Extra Heavy Grade:** High-end data center having high density racks, control rooms in industrial sector

Grade	Static Loading	
	Concentrated Loads	Uniformly Distributed Load (UDL)
Light	Not less than 2.7 kN over 300 mm sq and Not less than 1.5kN over 25 mm sq	Not less than 6.7 kN / m^2
Medium	Not less than 4.5 kN over 300 mm sq and Not less than 3.0 kN over 25 mm sq	Not less than 8.0 kN / m^2
Heavy	Not less than 4.5 kN over 25 mm sq	Not less than 12.0 kN / m^2
Extra Heavy	Not less than 4.5 kN over 25 mm sq	Not less than 12.0 kN / m^2
	This grade is also required to sustain a total load of 11kN applied equally on 4 points, each point 25 mm sq on a 200 mm x 200 mm square configuration at any point on the system.	

BS EN 12825 : 2001 (E)

This standard specifies the characteristics and performance requirements of raised access floors for which the main intended use is the internal fitting out of buildings, providing full access to the services to the plenum.

General and load classes: The ultimate load is the main criterion for classification. All other load bearing characteristics are related to the ultimate load. Raised access floors are classified according to the ultimate load as given in Table.

Class	Ultimate Load (kN)
1	4
2	6
3	8
4	9
5	10
6	12

BS EN 12825 : 2001 (E)

When the load applied is equivalent to the working load which is the ultimate load, it is divided by the safety factor, the measured deflection shall not exceed the stated value in accordance to table below. Two classes of the safety factor are specified: 2.0 and 3.0. Three classes of deflection are specified depending on deflection as mentioned in the Table.

Class	Max. Deflection in mm
A	2.50
B	3.00
C	4.00

The test shall be repeated four times placing the indenter in the following positions:

- at the center of the weakest edge, where this can be identified
- if not, two adjacent edges shall be tested - at the center of the panel and at a diagonal 70 mm from the edge of a pedestal head
- at any point which the test laboratory considers a point of weakness.