

# **TOMBO® BRAND**

## **NICHIAS SIGMA FLOOR®**



**NICHIAS Corporation**





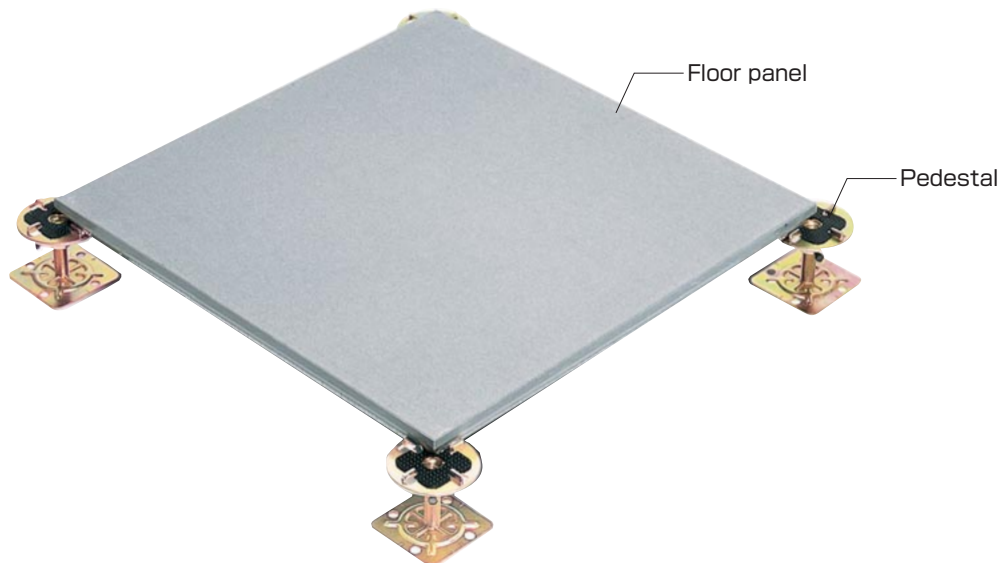
NICHIAS SIGMA FLOOR® is a reliable and comfortable raised access floor system we are proud of as the number 1 in the job reference (most installed raised access floor system) for the most advanced offices in the information technology.



# NICHIAS SIGMA FLOOR® can meet a variety of ever evolving needs from the general offices to the computer rooms.

Although there are many kinds of raised access floor systems in the market, The floor panel of NICHIAS SIGMA FLOOR is made of incombustible "calcium silicate board". NICHIAS SIGMA FLOOR is widely acknowledged by a number of customers that it has excellent performance in livability, load resistance, seismic resistance and so on.

Since NICHIAS SIGMA FLOOR has outstandingly high performance which draws the clear line among other kinds of floor panels, it has a number of job references for the informationally cutting edge offices in the re-development area in Tokyo such as Roppongi, Shinagawa and Marunouchi.



## Excellent Performance of NICHIAS SIGMA FLOOR

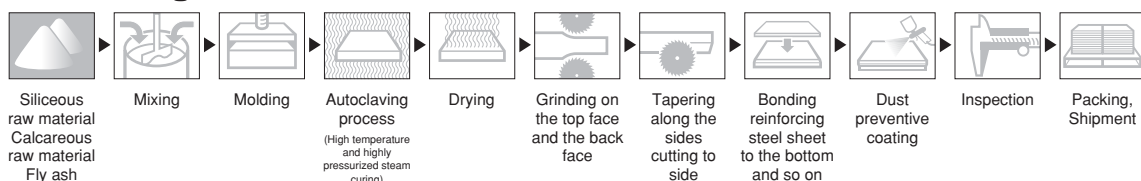
**Solid walking feel:** Excellent in solid walking feel and provides comfortable office environment.

**Safety:** The floor panel that is incombustible and of high strength in combination with the steel pedestal can make you rest assured in case of fire and earthquake.

**Dimensional stability:** Autoclaving (high heat and highly pressurized steam curing) process makes strong and stable crystalline body.

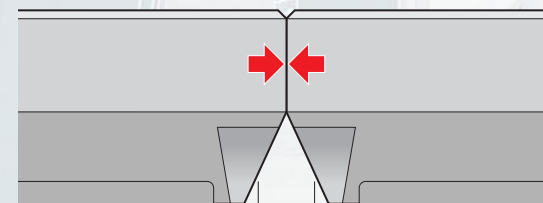
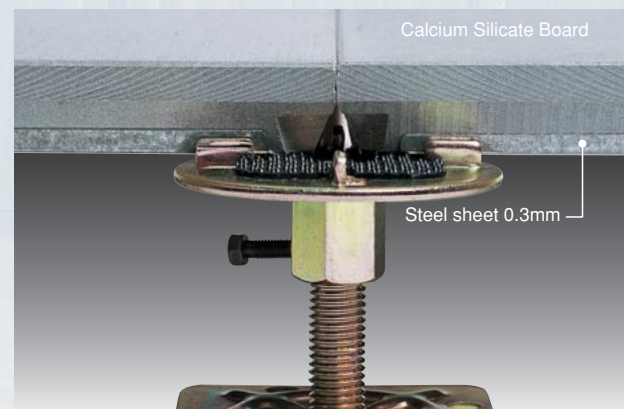
**Durability:** Withstands day-to-day and repetitive load and retain the excellent performance for a long period of time.

### Manufacturing Process of calcium silicate boards



# Five advantages of "The greatest of all floors with livable floor performance" NICHIAS SIGMA FLOOR®

## 1. Simple and High-performance Raised Access Floor



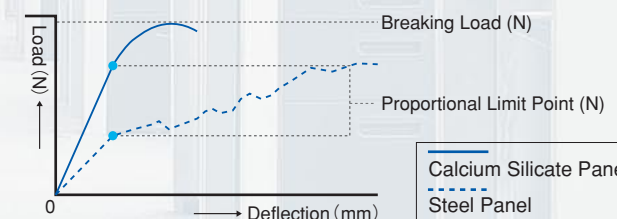
Since adjacent floor panels touch each other on the edge, the floor panel does not have horizontal and vertical movement providing stable panel setting and it realizes raised access floor that has ease of lifting up and putting it back. Panel lock system can be employed.

## 2. Three kinds of floor panel according to the load performance

NICHIAS SIGMA FLOOR is excellent in load resistance and can be for use in the general offices, large-sized computer rooms and the intelligent offices where OA (office automation) equipment is used in large numbers. You can select the appropriate floor panel from the three kinds of floor panels as below:

3000N For general offices	Type M300A	5000N For general offices	Type M5000A	5000N For computer rooms	Type M600A
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## 3. Excellent durability of "Calcium Silicate Board" proven by proportional limit point



The residual deformation of the floor panel occurs at the proportional limit point. Since the proportional limit point of NICHIAS SIGMA FLOOR panel is high, NICHIAS SIGMA FLOOR is appropriate and reliable also for use in heavy traffic area.

## 4. Freedom in design creates the atmosphere of office floor

NICHIAS SIGMA FLOOR widens a variety of choices of floor covering thanks to its dimensional stability. Decorative stone covering and wooden covering can be factory-bonded. NICHIAS SIGMA FLOOR can meet a variety of needs according to office uses with floor covering of elaborate design.



Anti-static vinyl tile



Carpet tile



Natural wood covering



Decorative stone covering

※ Stone covering and natural wood covering are not our standard products.  
※ Stone covering is available only when customers supply the stone covering.

## 5. Environmentally-friendly raised access floor system

### ●Recycled material is used

...Certified with the "Eco Mark"

We use fly ash as raw material for NICHIAS SIGMA FLOOR. Fly ash is a coal incinerated ash from power plants. NICHIAS SIGMA FLOOR contributes to the environmental conservation.

### Fly ash



60% of the floor panel is made of recycled fly ash and gypsum.

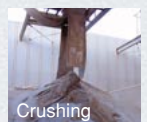


\*1: It is a registered trade mark of Japan Environment Association.

### ●Recycled use of used floor panels

...NICHIAS recycled system

We are actively addressing recycled use of used floor panels from the standpoint of environmental conservation and effective use of natural resources.



### ●We use formaldehyde-free materials only.

Formaldehyde-free materials equivalent to the classification F☆☆☆☆ of formaldehyde release are used for the floor panel, the pedestal, the adhesive and all other materials to prevent the sick building syndrome.



# Specifications of NICHIAS SIGMA FLOOR® panels

## SIGMA FLOOR panel selector

Application	Floor Panel						Panel System	Floor Covering
	Panel Model No.	Design Concentrated Load (N/m <sup>2</sup> )	Size (mm)	Thickness (mm)	Weight (kg)	Finish Floor Height (mm)		
General offices	M300A	3000	500	23.5	8.5	50~1,000	Panel Free System	Lay-on type Factory-Bonded type
							Panel Lock System	Lay-on type
General offices	M5000A	5000	500	26	9.5	50~1,000	Panel Free System	Lay-on type Factory-Bonded type
							Panel Lock System	Lay-on type
Computer rooms	M600A	6000	500	29	11.5	60~1,000	Panel Free System	Lay-on type Factory-Bonded type
							Panel Lock System	Lay-on type

## 2 Types of SIGMA FLOOR panels

### High density calcium silicate boards with steel sheet reinforcement

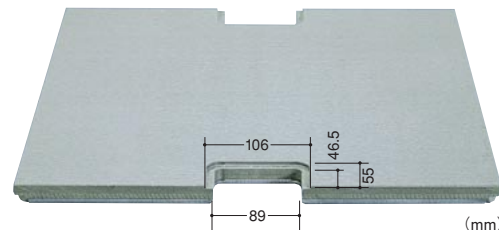
Reinforcing steel sheet is attached on the bottom of the floor panel. Dust preventive treatment is applied on the top face. The combination of Type 'O' panels and Type 'PK' panels with the cutout for wiring can be used according to office uses.



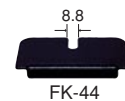
### Type 'O' floor panel



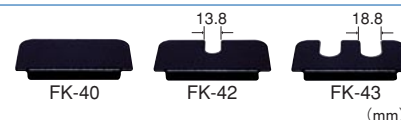
### Type 'PK' floor panel (option for M5000A and M600A concentrated load uses)



Standard Grommet Cover Lid Type PK:



Optional Grommet Cover Lid Type PK:



※Manufacturing lead time for optional items would be longer than standard items.

## 2 Types of floor covering

### Floor panel with factory-bonded vinyl tile:



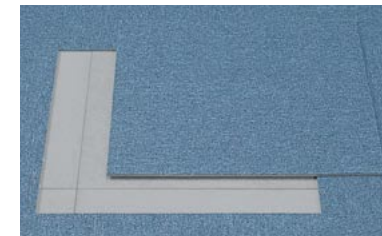
Vinyl tile

It is easy to do the installation and the maintenance since the floor covering is already bonded at the factory. There are a variety of floor coverings such as carpet tiles, vinyl tiles and natural wood floor tiles. (This panel can not be used with the panel lock system.)

※If floor panels are bonded with floor coverings other than those we recommend, the edge of the floor covering might come off or vinyl tiles might turn upward. Our recommended floor coverings are as follows.

- TAJIMA, Inc. : ANTISTATIC TILE C
- TOLI Corporation : FREE TILE

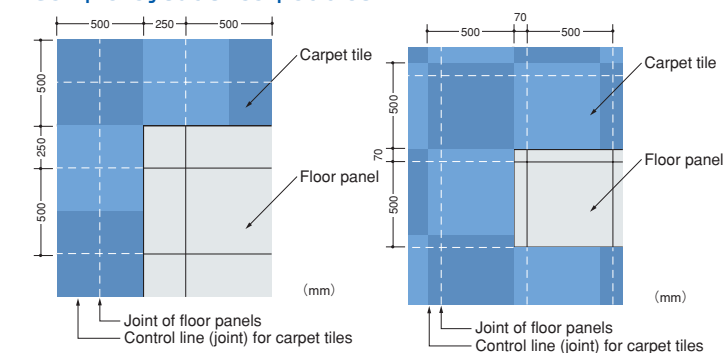
### Lay-on type floor coverings:



(The joint of the floor panels might stand out through the carpet tiles.)

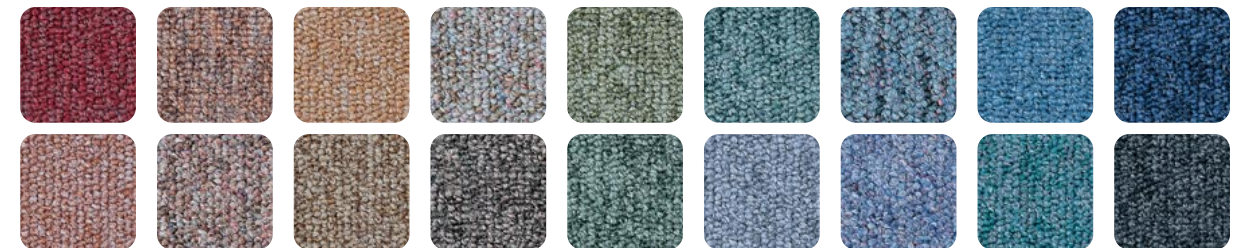
There are a variety of lay-on type floor coverings such as lay-on carpet tiles and other floor covering materials. Lay-on type floor coverings can be selected according to the office layout plan and its functions.

### Sample layout of carpet tiles



## A wide variety of floor coverings

### Carpet tiles Lay-on type Factory-Bonded type



### Vinyl tiles (Standard colors)

Factory-Bonded type



### Natural wood floor coverings

Factory-Bonded type

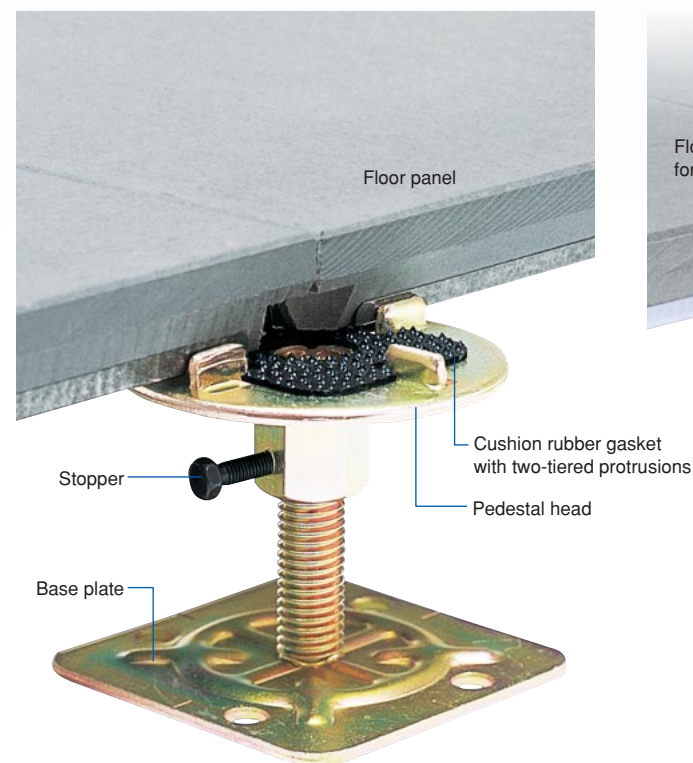


※The print color in this brochure might deviate from the original color of the products. Please see the samples for selection of floor coverings.



# The systems and the pedestals of NICHIAS SIGMA FLOOR®

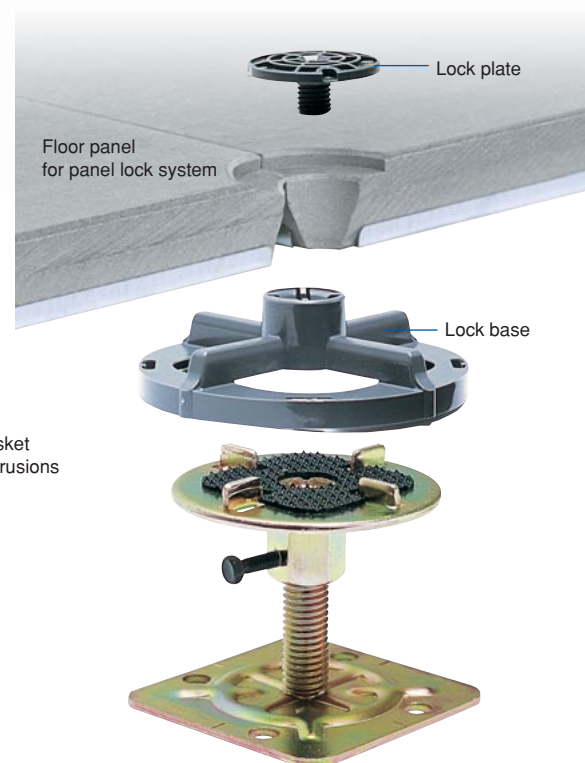
## Panel Free System



It is easy to open and close the floor panel.

The floor panel can be lift up and put back freely without a hassle also after the installation. Changes in the office layout require movement of wiring. It is easy to change the alignment of wiring.

## Panel lock system



Floor panels can be secured easily.

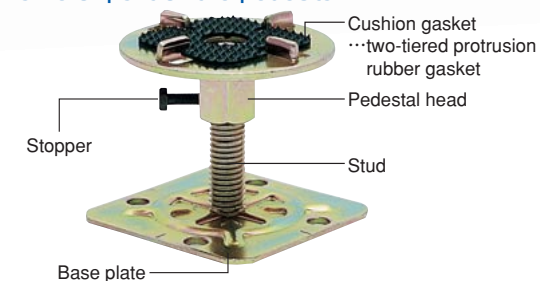
It is easy to secure the floor panel with the combination of the lock plate and the lock base. The maintenance and the office movement / expansion can be done speedily. Stable walk feeling is retained even after the changes in the direction of the floor panel and the movement of the floor panel.

※"Security Lock System" is also available. Please contact us.

## Specifications of the pedestal

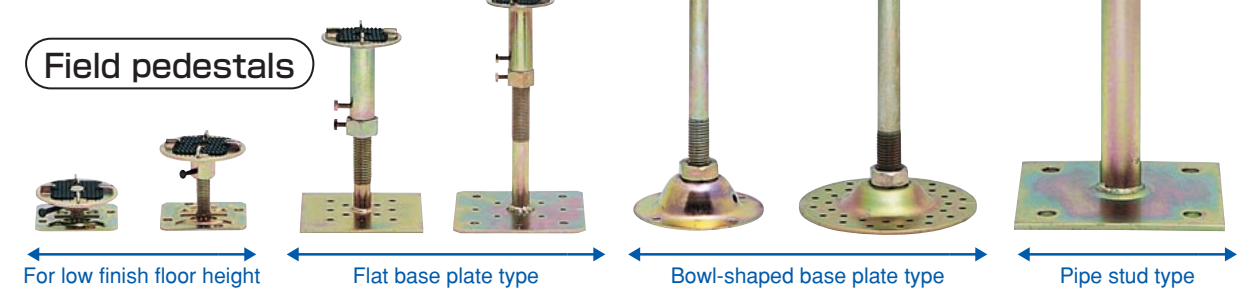
A full line-up of finish floor height from 50mm to 1,000mm

### Name of part of the pedestal

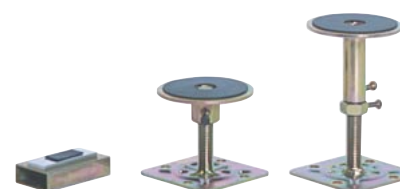


※Please contact us concerning the load resistance and the seismic resistance.  
※We will supply the standard pedestal unless there are specific requirements.

### Field pedestals



### Perimeter pedestals and reinforcing pedestals



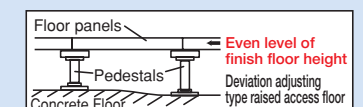
There is no damage to the SIGMA FLOOR system after the seismic resistance test of 1G. (up to 200mm finish floor height)

Seismic resistance test of one (1) G was conducted on pedestals up to 200mm finish floor height according to Japan's Public Buildings Association, and there was no adverse effect found in the structure and performance.



Raised access floor system that can adjust the deviation in the horizontal level of the concrete floor

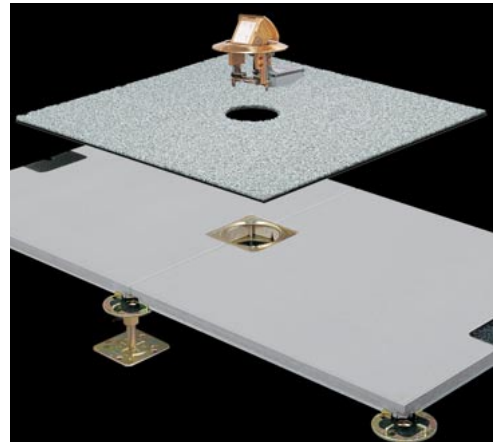
SIGMA FLOOR can adjust the deviation in the horizontal level of the concrete floor and keep the access floor panels horizontally. OA (Office Automation) equipment can be stably put on the SIGMA FLOOR.



# A wide variety of components that has high performance for office requirements.

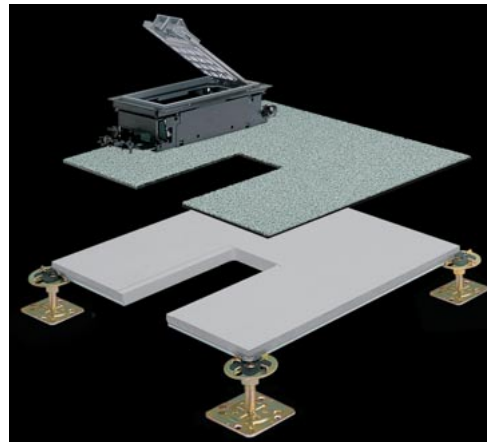
In the case where the pop-up outlet is installed.  
In combination with the floor panel.

The pop-up outlet is installed to the cutout of the panel with the adjustor.



In the case where the inner outlet box is installed.  
In combination with the optional panel.

The outlet box is installed to the optional floor panel.  
※ Reinforcement pedestals might be necessary depending on the configuration.

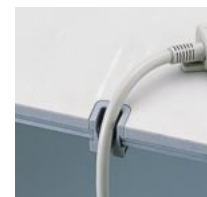


Manufacturer and product of the inner outlet that is compatible with NICHIAS Sigma Floor.

Manufacturer	Matsushita		Hirayama	
Product name	NR331234K	NR331224K	HB-11-2	HB-11-2Y
Size (mm)	137×232×68		108×230×50	

Grommet cover lid for SIGMA FLOOR with factory-bonded vinyl tile

Grommet cover lid (FK-51 G, B) is installed to SIGMA FLOOR with cutout.



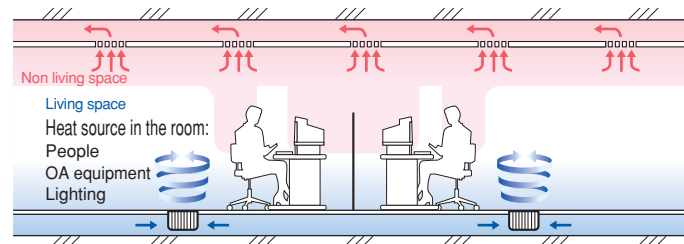
(G: Gray, B: Brown)

(Please contact us for details.)

Air-conditioning outlet is installed to the access floor.

Raised access floor for pressurized air-conditioning outlet

NICHIAS SIGMA FLOOR and air-conditioning outlet can create comfortable living space with their high performance.



## Grill

There are a variety of grills that have various materials, sizes and open rates. Appropriate grills can be selected according to office applications.



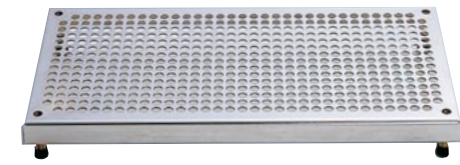
(GP-40)



(GP-41)



(GP-60)



(GP-64)

Product	Size	Open rate	Material	Remarks
GP-40	500×500mm	75%	Steel	
GP-41	500×500mm	0 to 62%	Steel	With damper
GP-60	500×500mm	40%	Steel	Panel Free System and Panel Lock System
GP-64	500×250mm	39%	Steel	Bolt pedestal

## Ramp and Fascia

The ramp and fascia meet specific office layouts.



Ramp



Fascia

## Panel Lifter

Please use the Panel Lifter horizontally when floor panels are opened and closed.

※ Please lift the panel immediately after the Panel Lifter is set to the floor panel. Please reset the Panel Lifter when the floor panel is not lifted immediately.  
※ Please put the floor panel back to the original position and direction.



LS-20

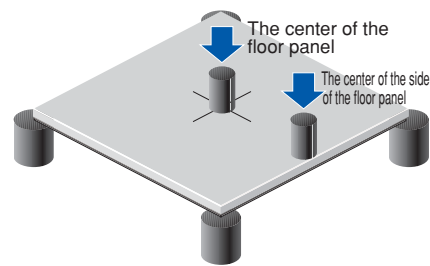


LS-10 (only for floor panel with factory-bonded vinyl tile)



# HIGH PERFORMANCE and DURABILITY are certified by such tests as Concentrated Load, Rolling Load, Impact Resistance, and Electrical Resistance, etc.

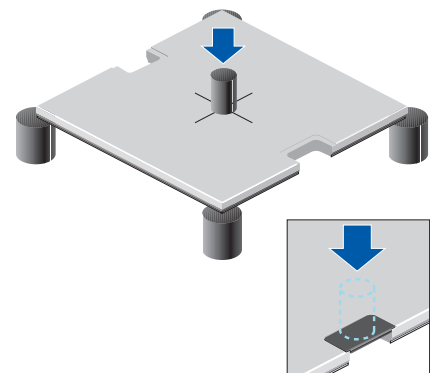
## Concentrated Load test



SIGMA Floor panel is supported with four supports at the corners. Diameter of the supports is 80mm. Load is applied at the center of the SIGMA Floor panel and at the center of the side of the floor panel with a loader of 50mm diameter.

SIGMA Floor Type 0 panel	Model	Load applied at the center of the floor panel		Load applied at the center of the side of the floor panel	
		Breaking load (kN)	Deflection (mm)	Breaking load (kN)	Deflection (mm)
	M600A	12 minimum	2.0 max. (at 6kN load)	12 minimum	2.5 max. (at 6kN load)
	M5000A	10 minimum	2.0 max. (at 5 kN load)	8 minimum	2.5 max. (at 5 kN load)
	M300A	9 minimum	2.0 max. (at 3 kN load)	6 minimum	2.5 max. (at 3 kN load)

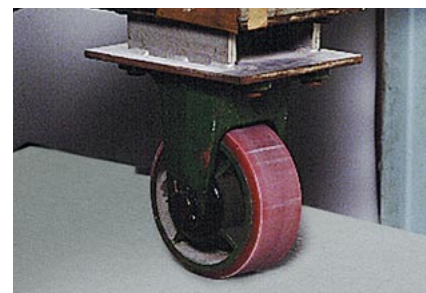
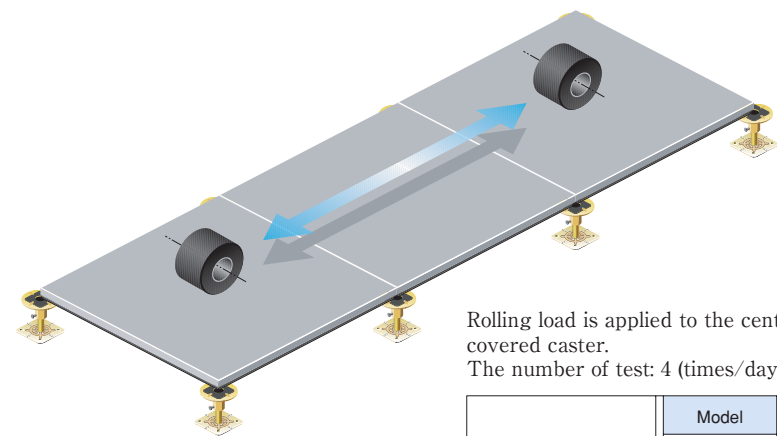
\*The above figures can be used for specification purposes.



SIGMA Floor PK panel	Model	Load applied at the center of the floor panel		Load applied at the center of the side of the floor panel (load applied on the steel cover lid of 2.6mm thickness)	
		Breaking load (kN)	Deflection (mm)	Breaking load (kN)	Deflection (mm)
	M300A	9 minimum	2.0 max. (at 3kN load)	6 minimum	2.5 max. (at 3kN load)

\*The above figures can be used for specification purposes.

## Rolling Load test

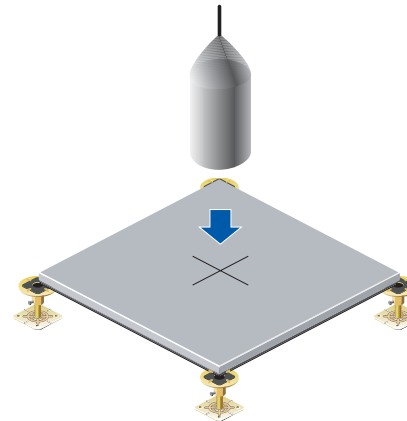


Rolling load is applied to the center section of the floor panel with a urethane covered caster. The number of test: 4 (times/day) × 250 (days/year) × 40 (years)=40,000 times

Rolling load	Model	Rolling load (N)	Number of test (times)	Damage
	M600A	5,000	40,000	No damage
	M5000A	5,000		
	M300A	3,000		

\*The above figures can be used for specification purposes.

## Impact Resistance test

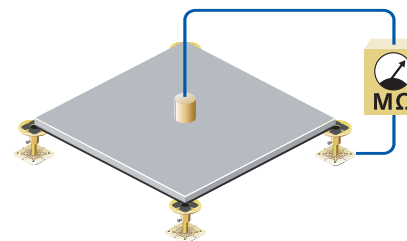


SIGMA Floor panel is supported with four pedestals with a pedestal head of 80mm diameter at the 4 corners. After a sand bag of 30 kg (with a bottom area of 220mm diameter according to JIS A 1414) is dropped from the designated height to the center of the floor panel, concentrated load is applied to the center of the floor panel.

Impact Resistance	Model	Height of sand bag (cm)	Breaking load (kN)	Deflection (mm)
	M600A	90	12 min.	2.0 max. (at 6kN load)
	M5000A	70	10 min.	2.0 max. (at 5kN load)
	M300A	70	9 min.	2.0 max. (at 3kN load)

\*The above figures can be used for specification purposes.

## Electrical Resistance test



Electrical resistance value is measured according to JQA's resistance test standard.

Electrical Resistance	Floor panel surface	Resistance value (Ω)
	Bare finish (without covering)	$1.0 \times 10^8$ to $1.0 \times 10^9$
	Vinyl tile factory-bonded	$1.0 \times 10^7$ to $1.0 \times 10^8$

The above figures are test results and should not be used for specification purposes.

JQA: Japan Quality Assurance Organization

※According to JQA's test method, the safe range of electrical resistance is considered to be from  $10^5$  to  $10^{10}$  Ω.

## Seismic Resistance test



According to the seismic resistance test standard of Japan's Public Buildings Association, 1.0G of horizontal vibration is applied to the SIGMA Floor in the dimensions of 3,000mm × 3,000mm after evenly distributed load is applied and a desk (load of 1,600N) is put on the SIGMA Floor.

Seismic Resistance	Evenly distributed load	Result
	3,000N	No damage
	5,000N	No damage

NICHIAS Sigama Floor satisfies a variety of performance requirements for the access floor at a high level, and provides safety and comfort.

NICHIAS Sigama Floor is highly-appraised in strength characteristics such as load resistance and seismic resistance, etc. by reliable tests both inside and outside of Japan such as the Construction Technology Appraisal System of Japan's Ministry of Land, Infrastructure, Transport and Tourism, and Japan's Public Buildings Association.

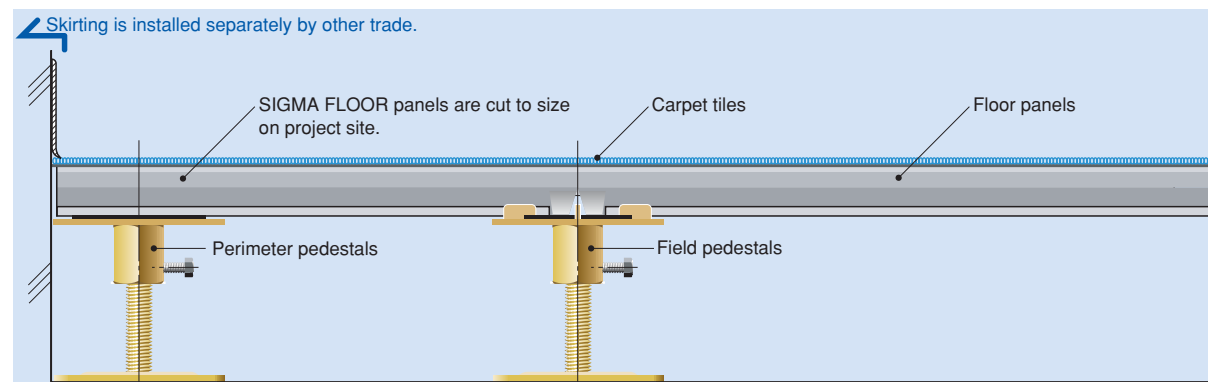




# Standard application procedures Comfortable office is realized based on conditions of each project.

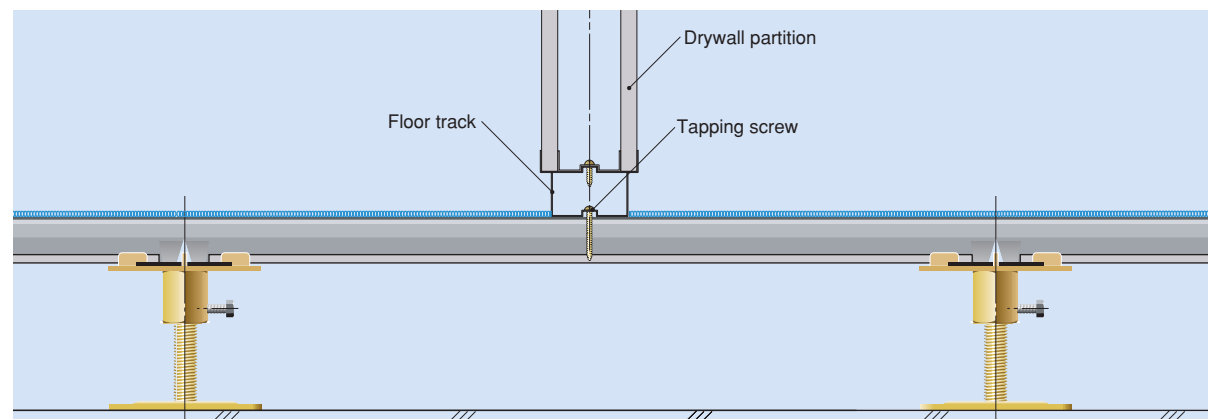
## Application details

### In the case where SIGMA FLOOR panels are used at the perimeter

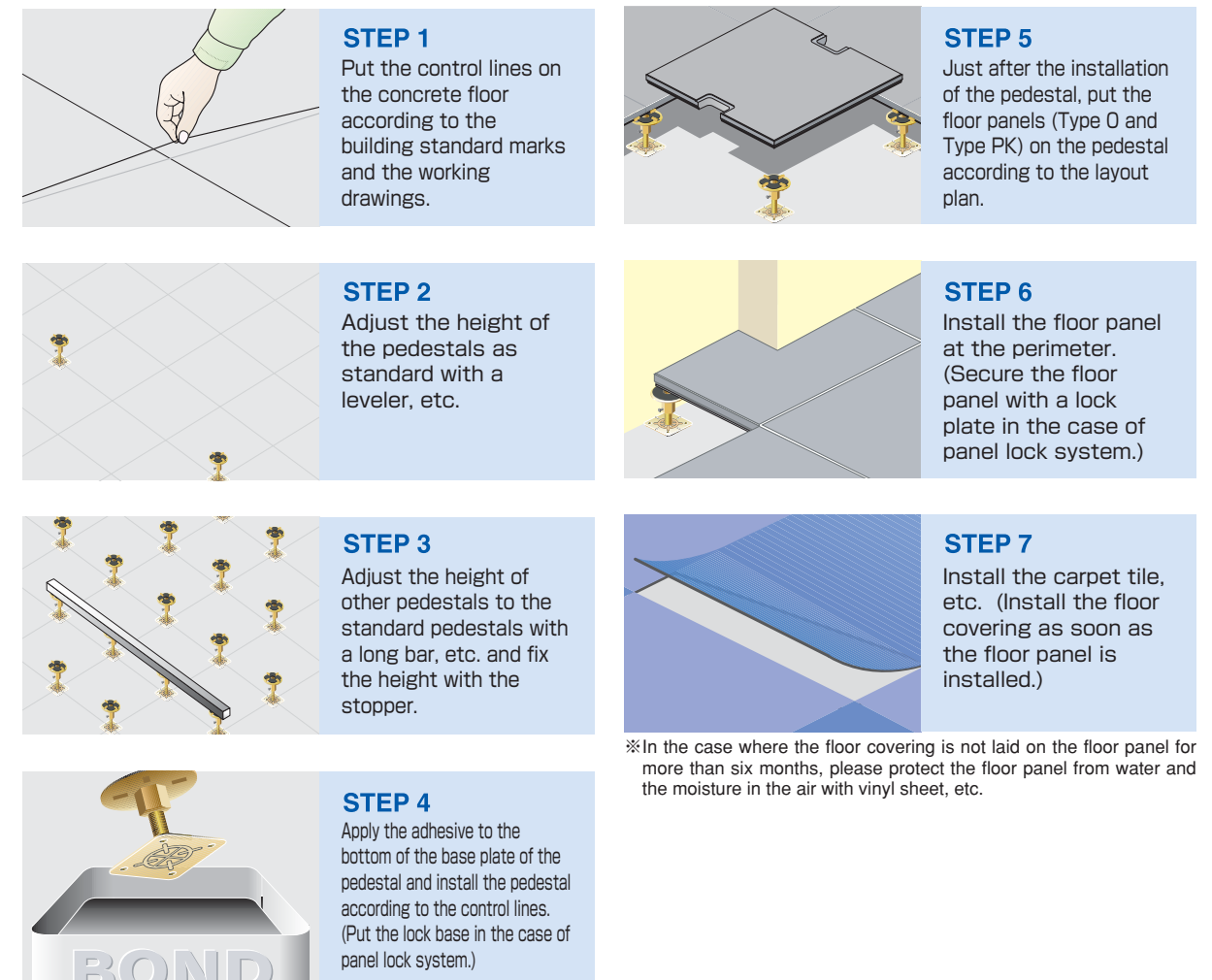


### Drywall partition (separate installation)

The floor track of drywall partition can be secured to the SIGMA FLOOR with tapping screws. Pilot drilling is required prior to screwing to the SIGMA FLOOR.



## Installation Method (An example)



※ In the case where the floor covering is not laid on the floor panel for more than six months, please protect the floor panel from water and the moisture in the air with vinyl sheet, etc.

※ In the case where concrete slab is coated with primer, please make sure with a manufacturer of the primer concerning required condition of concrete slab floor and required period of curing time for the primer prior to bonding pedestals to the floor and so on.

### Prohibitions:

- Please do not install or move equipment over the design concentrated load. The design concentrated load is designed based on loading on an area of 50mm diameter.
- Please do not install floor panels upside down because this reduces their strength.
- Please do not use NICHIAS SIGMA FLOOR for applications other than the raised access floor.

### Cautions:

- Please protect the floor panel with plywood when heavy things such as equipment are moved.
- When heavy things such as the bookcase are installed on small supports, uneven and excess loading might be applied to the floor panel. This might lead to deformation or damage of the floor panel. Please put the steel sheet, etc. under the support to distribute the load. (Please install the heavy equipment gently to avoid impact.)
- When the equipment that generates repetitive loading and vibration such as the mobile rack or large-sized rotary press is installed, please install the equipment on a mount that is secured on the concrete floor to insulate the floor panel from the equipment.
- If the equipment has the possibility of toppling down, please secure the equipment to the concrete floor or the load-bearing walls. Please do not secure the equipment to the floor panel or the pedestals.
- A fall of the heavy load on the floor and an excessive impact might cause failure or falling of panels. If the panels are used in this situation, please make sure that the panels do not have any defects in each case. If necessary, please replace the panels.
- Please contact us when cutting and modification of panels and pedestals are required because cutting and modification of panels and pedestals might lead to reduction of strength and might cause failure or falling of panels.
- Please contact us when panels with service holes are moved to other locations because installation of reinforcing pedestals or other reinforcement is required.
- Please do not open the floor panel when it is not necessary. Please pay attention not to stumble or fall.
- Please do not hand-carry the floor panel with the panel lifter.
- Please keep water away from the equipment and the wiring during cleaning.
- Please store the panel and the accessories away from water.
- Please do not fail to leave or use the installed floor panel without laying the floor covering for more than six (6) months.
- An unusual smell might be generated by the reaction between plasticizer of back side rubber of the carpet tile and alkaline water that is contained in the floor panel. Please ventilate the room sufficiently after installing the carpet tile.
- Please comply with your local regulations concerning industrial waste when you dispose the floor panel.

Please contact us if you have questions or anything to make sure concerning things other than the above cautions.





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