RAISED FLOORING

SINCE 1984®
the protectors
BUILDING PRODUCTS COMPANY

ABOUT US

THE PROTECTORS is Pakistan's leading company for manufacturing custom made architectural products since 1984. The product range is extensive, which includes a wide variety of window coverings and treatments, specific flooring and ceiling options and solutions to other thresholds that require security or light control.

Since the beginning, THE PROTECTORS commitment to excellence has driven their decision to ensure that all their products are designed and custom-assembled to be highly efficient for its purpose. This guarantees the products quality control and lead THE PROTECTORS to be the sole innovator and promoter of its products in Pakistan.

Moreover, THE PROTECTORS maintains association with world-renowned architectural product manufacturers, which allows the company caters to clients from all over Pakistan who are conscious about the quality, longevity, and durability of the products they want to incorporate.

Building New Solutions:
From pre-planning through to project completion The Protectors is your partner of choice.
The Company's extensive manufacturing capability enables quality to be strictly maintained whilst allowing maximum flexibility to meet individual project requirements.
Through partnerships with clients The Protectors turns concepts into reality.

The Protector Concepts:
Tailored solutions specifically geared to satisfy individual project requirements

The Protectors Products:
Quality materials and systems to the very highest industry standards

The Protectors Service:
Comprehensive project management services

CONTENTS

INTRODUCTION

What is a Raised Access Floor System?

A raised floor or access floor system comprises of load bearing floor panels laid in a horizontal grid supported by adjustable vertical pedestals to provide an under floor space for the housing and distribution of services.

Why use a Raised Access Floor?

The floor panels are readily removable to allow quick access to the under floor services for installation and maintenance.
Space can easily be adaptable for changing uses, examples in speculative buildings premises need to be adaptable for the needs of incoming occupiers.
Space allows for ever increasing volume of power, data and telecom services that are found within modern buildings.
The under floor void is often used as a large duct of HVAC system.

These services will typically include the following:

Electrical power
Data
Telecom
Environmental control/air conditioning
Fire detection and suppression
Security
Water and drainage

INTRODUCTION

Therefore can be used for facilities such as:
Financial and Insurance offices
National and Local Government offices
General administration buildings
Call Centers
Data processing centers
Telecom switch centers
Distribution centers
Education facilities
Retail facilities
Certain industries that require clean room facilities, example electronic or pharmaceutical

Two types of Raised Access Flooring:
1. Concore Cementitious Panels-
ConCore Access Floor panels are epoxy coated unitized shells consisting of a flat steel top sheet welded to a formed steel bottom sheet filled with a highly controlled mixture of lightweight cement. Manufactured to exact tolerances these solid panels deliver the ultimate in design, performance, plenum integrity, service and usability.

2. Woodcore HPL Panels-
Woodcore panels consist of high-density composite wood core glue to and encased in hot dipped galvanized formed steel sheets. These panels have a class A flame spread rating and provide excellent rigidity, durability, and acoustic performance.

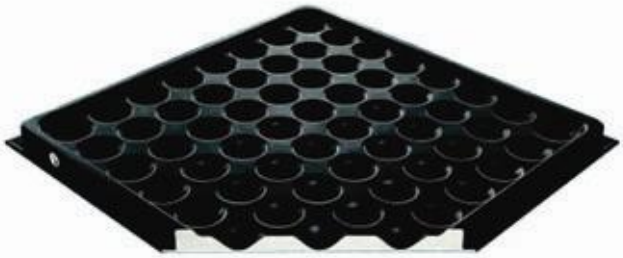
CONCORE CEMENTITIOUS PANELS

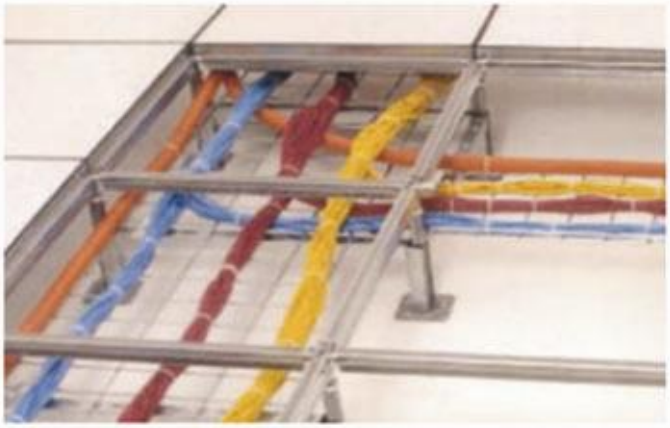
Panel Construction and Specifications

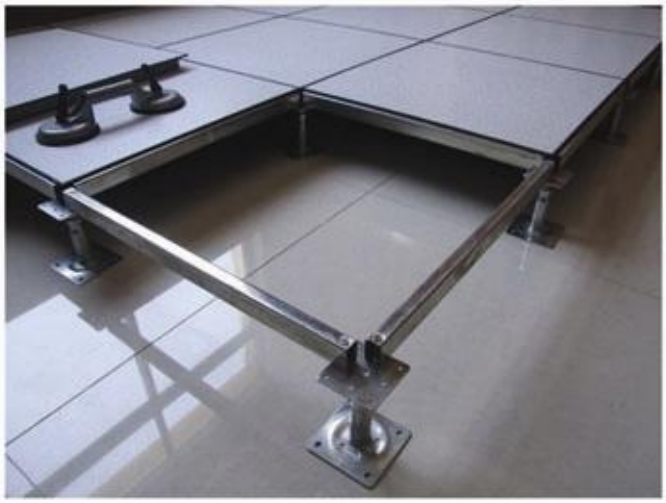
The Concore Cementitious panels is a is a robust lightweight cementitious panel which is steel encased to help provide maximum durability and is regarded as the standard panel for numerous applications.

This panel comprises of a hollow shell made of a flat steel top and a profiled steel base that once welded are filled with a foam cemented base core. This enables the panel to exhibit good structural performance in conjunction with excellent fire performance (can contain fires for up to 3 hours).

Panel Size: 600 x 600 x 40mm







CONCORE CEMENTITIOUS PANELS

Floor Panel

This is the horizontal load bearing component.
These floor panels will be supplied with a factory applied HPL (high pressure laminate) finish in two standard colours,grey-white and wooden, and can be perforated or plain.
However, there are other finishes and materials that can be installed as the finished floor surface for example carpets or stone sheets.

Pedestal

This is the vertical adjustable supporting structure to the raised floor panels. The pedestals are normally bonded to the sub floor using mechanical fixings.
The pedestal assembly provides vertical adjustment to allow the raised floor to be installed flat and level despite undulations in the sub floor.

Stringer

This is a horizontal component that connects pedestals together. It connects to the pedestal head and is used to provide additional lateral support at greater floor height and/or increase the structural performance of the raised floor system.

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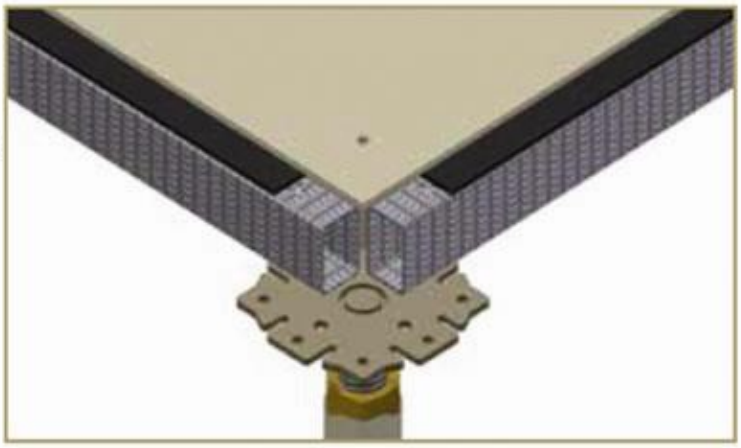
CONCORE CEMENTITIOUS PANELS

Rigid Grid System

This system as the name suggests has a permanently fixed rigid grid understructure made up from the pedestals and stringers. The stringers are screw fixed onto the pedestal heads forming a perfect 600 x 600mm square grid.



Gravity Fixed Panels:

Panels are gravity fixed to the understructure with stringers providing location and extra strength.

4 Corner Screw Panel:

Screw hole in each corner allows the panels to be individually screw fixed providing greater rigidity. This system can be gravity fixed or can be gravity AND screw fixed.

Panel Load Tolerance

Panel Type	Concentrated Load	Uniform Load	Ultimate Load	Impact Load
Medium Grade: 3.6 kN	3.6 kN	9.4 kN/m²	14.7 kN	670 N
	Rolling Loads	**10 Passes**	**10,000 Passes**	**40,000 Passes**
		3.6 kN	2.7 kN	2.25 kN

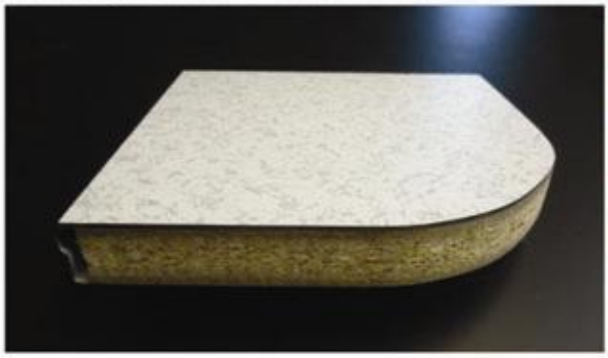
WOODCORE HPL PANELS

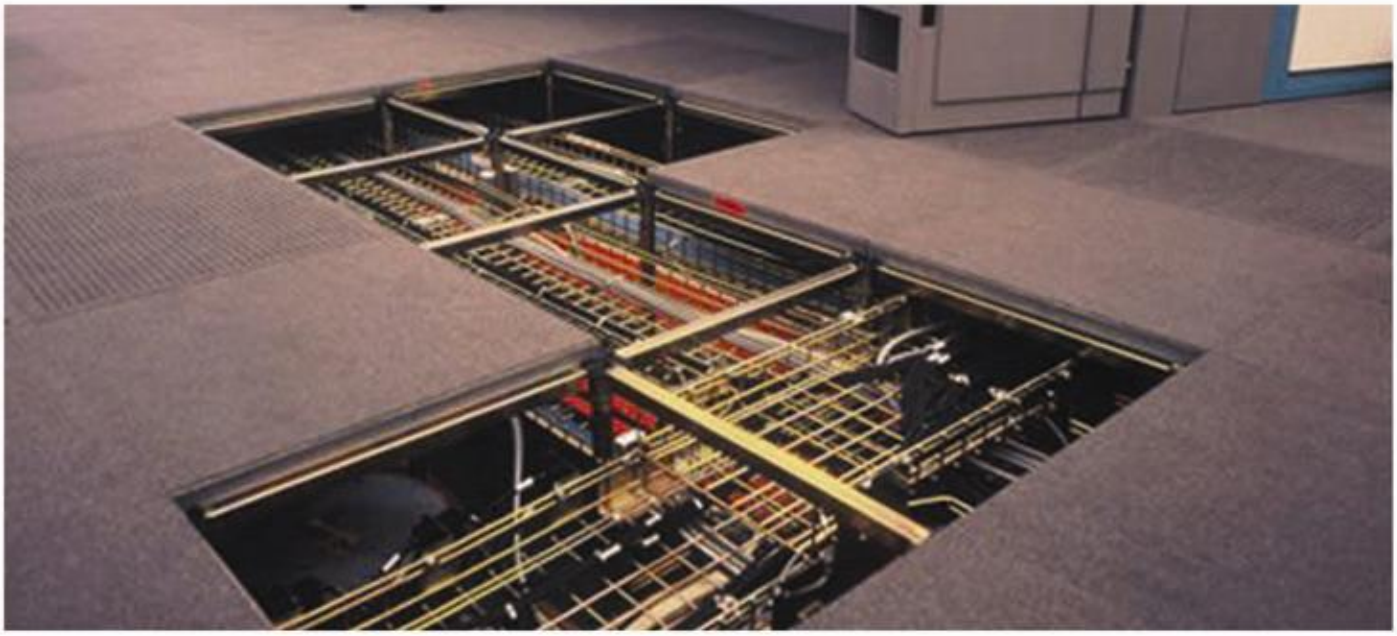
Panel Construction and Specifications

These Woodcore panel incorporates a traditional wood core infill that has been encased in steel to provide maximum longevity and increased load tolerances that were not previously available.

This panel construction comprises of a high density particle board core that is encased by galvanized steel laminated to the particle board by a structural polyurethane or epoxy resin adhesive. This construction type is capable of providing high strength and good acoustic and fire performance (can contain fires for 1 hour).

Panel Size: 600 x 600 x 40mm





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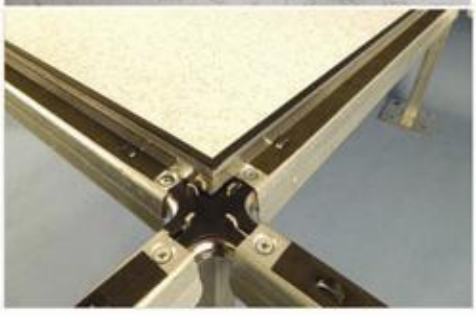

WOODCORE HPL PANELS

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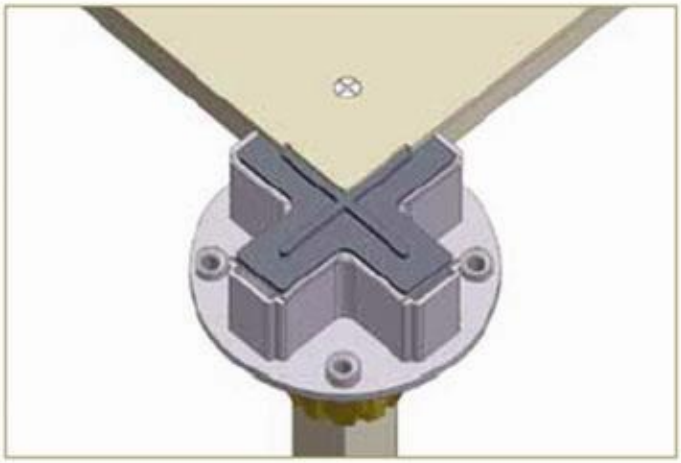

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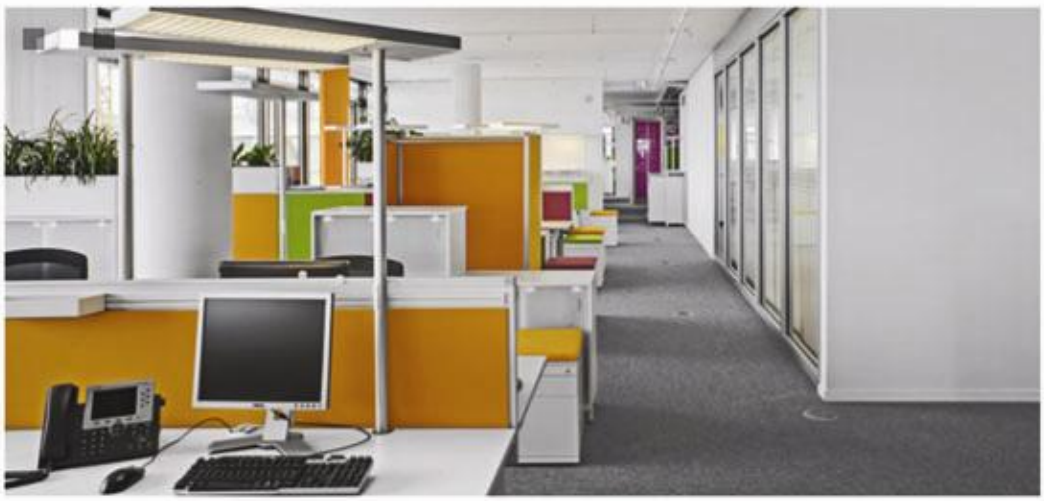


LOAD BEARING SPECIFICATIONS

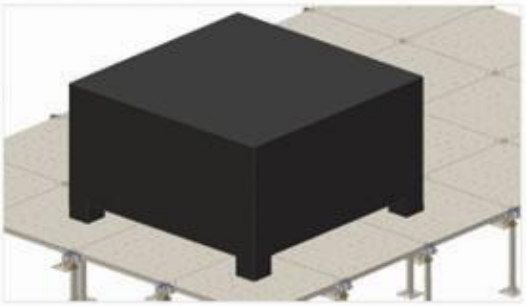
Understanding the Specifications

Before the design of the layout and functionality of a raised floor the load capacity and tolerance must be determined. To do this it is essential to understand the different loads that can incur.

Concentrated Load

The maximum deflection and permanent set of an access floor panel under load. When testing for a panel's concentrated load, a 25x25mm^2 load is applied onto the surface of the panel at its weakest point. The panel deflection and permanent set is measured by recording the indentor movement.

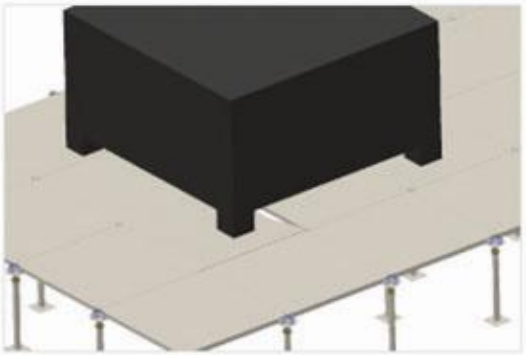
In a typical office building scenario, concentrated loads are typically imposed by stationary furniture and equipment with legs.



Ultimate Load

The maximum load applied onto a panel without failure. When testing for a panel's ultimate load, a concentrated 25x25mm^2 load is applied onto the surface of the access floor panel and this load is increased until the panel fails structurally.

This is sometimes expressed as a multiple of concentrated load and referred to as a safety factor. A minimum safety factor of two is recommended.



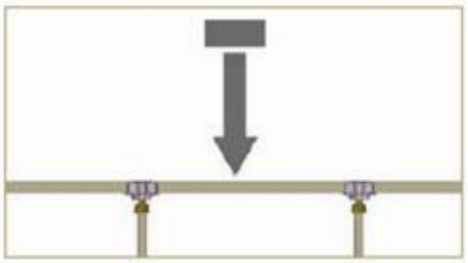
LOAD BEARING SPECIFICATIONS

Rolling Load

The durability and/or deformation of a raised floor system when exposed to commercially anticipated caster traffic using specific load. Rolling loads are defined by the number of passes, size and hardness of the wheel, and the combined weight of the cart and its contents on each wheel.
These loads are typically imposed by equipment wheels across the raised floor.

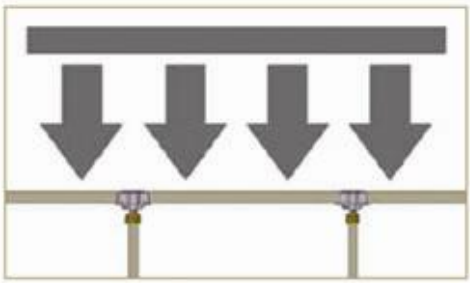
Impact Load

The effects and/or deformation of a raised floor panel and understructure, when subjected to heavy loads dropped onto the raised floor system. A panels impact load is tested by dropping a weight from 900mm onto a 25 x 25mm steel indentor.



Uniform Load

Static force equally applied over the panel, and is typically imposed by stationary furniture. Uniform load is tested by applying a load over a $1m^2$ area. Once the load has been removed, the deflection or permanent set of the indentor movement must not exceed 2.5mm.



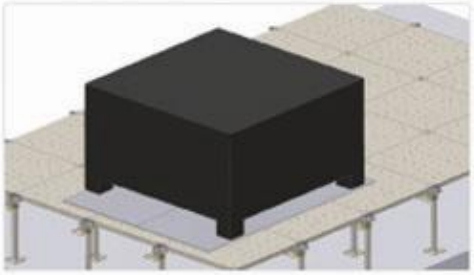
LOAD BEARING SPECIFICATIONS

Supporting Heavy Loads

In situations where heavy loads need to be supported, it is important that all information relating to that equipment is considered before any decision is make, regarding the sustainability of a specific raised floor system.
In some circumstances, it will be sufficient to use a panel with a higher load rating to accommodate for the extra load. However, there are alternatives.

1. Additional pedestals can be introduced in high load or high activity areas, as illustrated below.

2. Spreader plates can also be used in order to distribute the load evenly across the greater area. Spreader plates are generally constructed using large sheets of 25mm thick plywood.



Axial Load

Is a vertical load applied to the centre of the pedestal due to concentrated, rolling, uniform and other loads applied to the surface of the access floor panel.

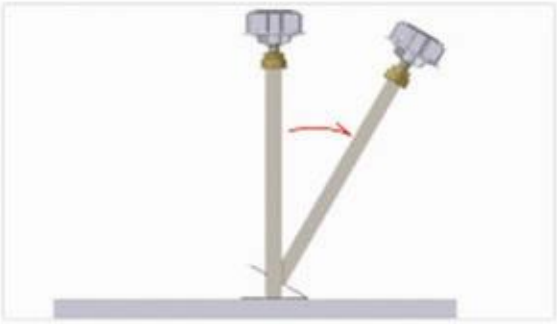
LOAD BEARING SPECIFICATIONS

Overturning Movement

The understructure of the access floor system is the major supporting element. As a result, careful attention needs to be paid to the type of understructure you specify for your project.

Loads that are to be considered in the understructure support are:

1. Rolling load traffic
2. Underfloor work due to cable installations



Seismic Load

Is a combination of vertical and lateral movements, usually in the form of earthquakes. When designing a raised floor location with high seismic activity, it is critical to have a firm understanding of the seismic requirements of the access floor and understructure from the onset, to avoid re-planning or re-installation of an appropriate system to cater for those needs.

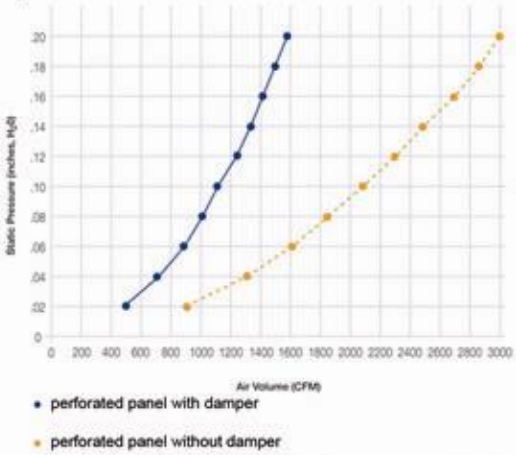
AIRFLOW SYSTEM

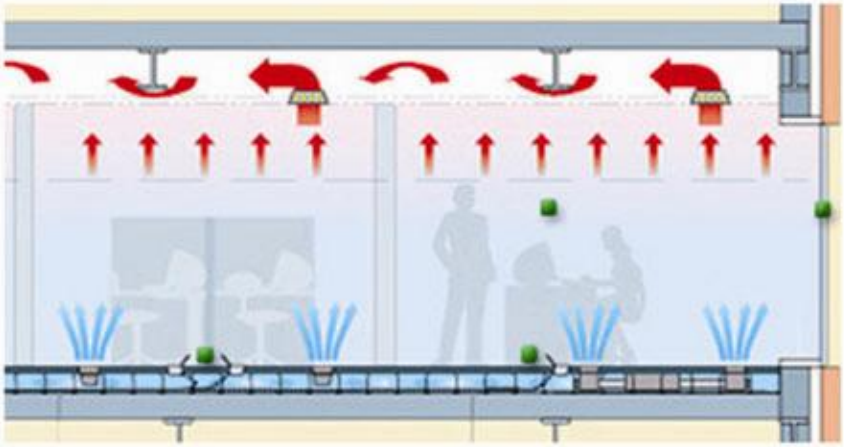
Airflow can be introduced and is essential for certain projects where Raised Flooring is used. With the different options of adding Air Grilles and Perforated Panels (see System Accessories) ventilation is allowed to keep spaces with heavy cables and wires relatively cooler.

The standard perforated panel has free open area of 25% to allow significant airflow where additional air is required. An adjustable damper assembly can be attached if required.

Moreover, Raised Flooring enables an easier and more economical ventilation system in a space by allowing the HVAC system to be installed in the floor rather than the ceiling.

These airflow options are essential in the following applications:
Data centers
Equipment room
Computer offices
Specialised industries





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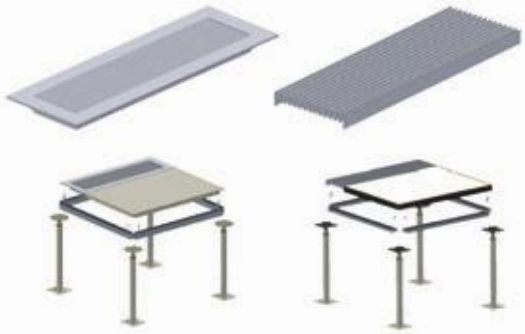
SYSTEM ACCESSORIES

Air Grilles

Air grilles come in a variety of sizes for all our panel types and are finished in a clear anodized aluminum finish, with or without dampers attached.



Grommets/ Inserts/ Koldlocks

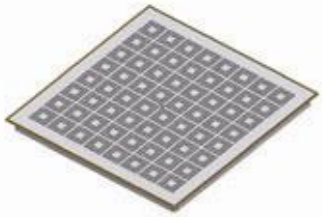
Have a variety of grommets, inserts and koldlock products to help cater for your project needs.

Panel Lifter

Panel lifter allows for a fast and simple removal of an access floor panel, the client can also be provided with a custom wall mounted tray to house the panel lifter.

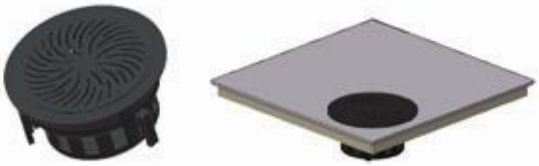
Perforated Panels

Perforated panel is a 600 x 600mm hollow steel panel with a inbuilt damper to help distribute and control the air flow in Data/Comms room like applications. The damper is adjusted from the grille face, using an allen key which opens and closes the damper as required.

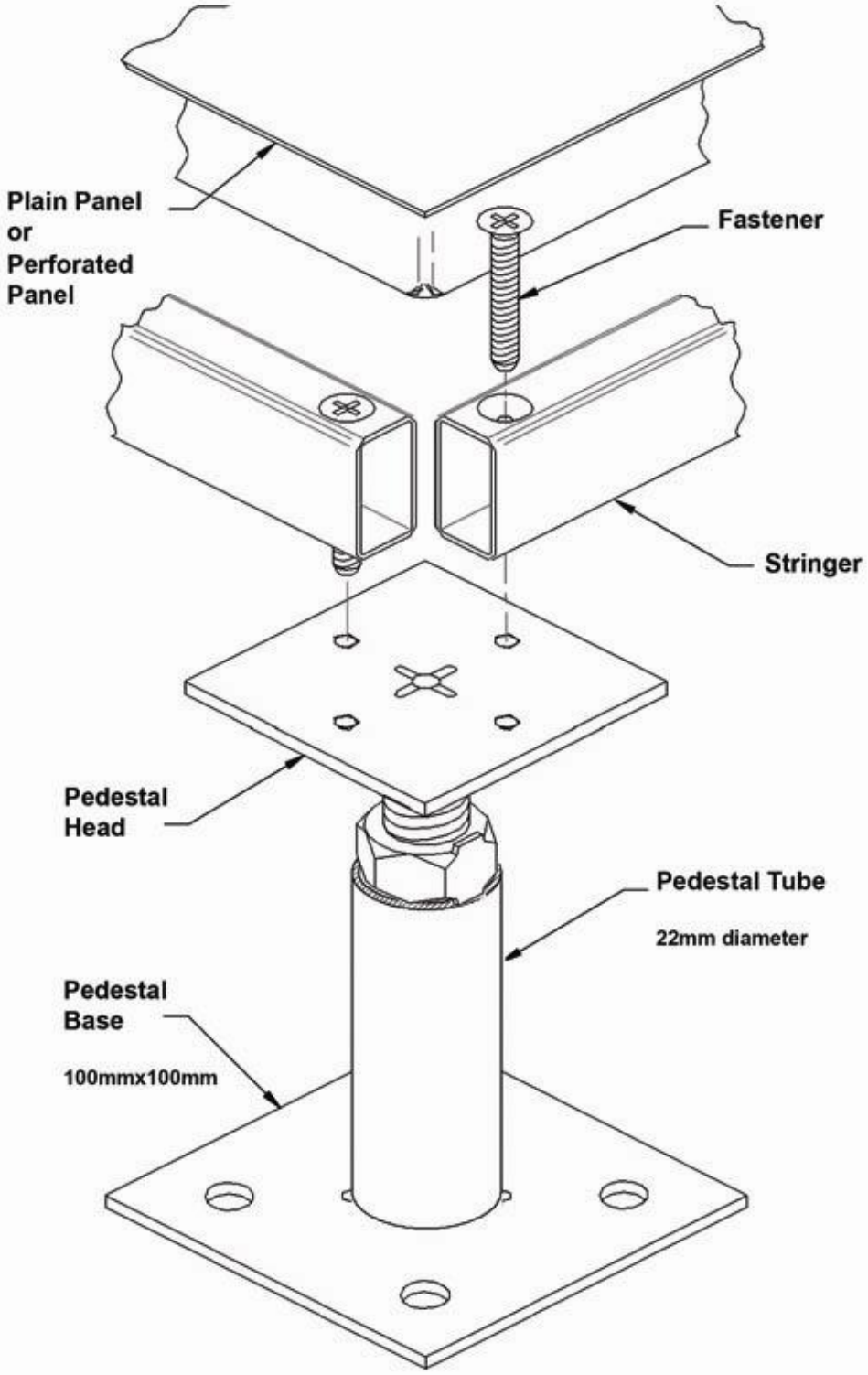


Circular Air Diffuser

Circular diffuser helps distribute and control the air flow in computer/data/comms/switch room applications. Its damper can be adjusted to increase, decrease or shut the air flow to suit an individual's comfort needs, the damper is adjustable by rotating the top of the diffuser.



Rigid Grid Component for Concore Cementitious Panels



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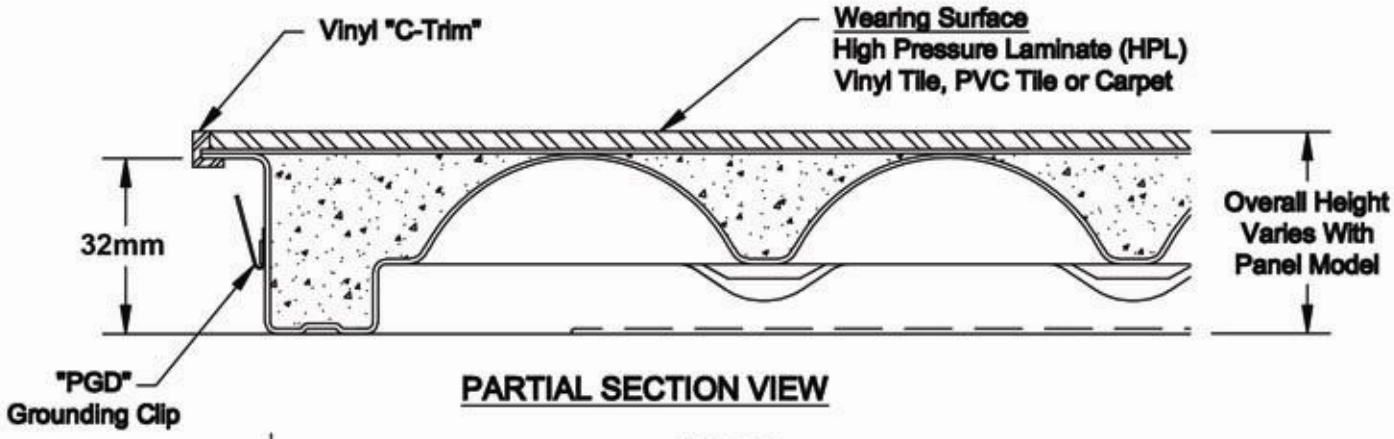
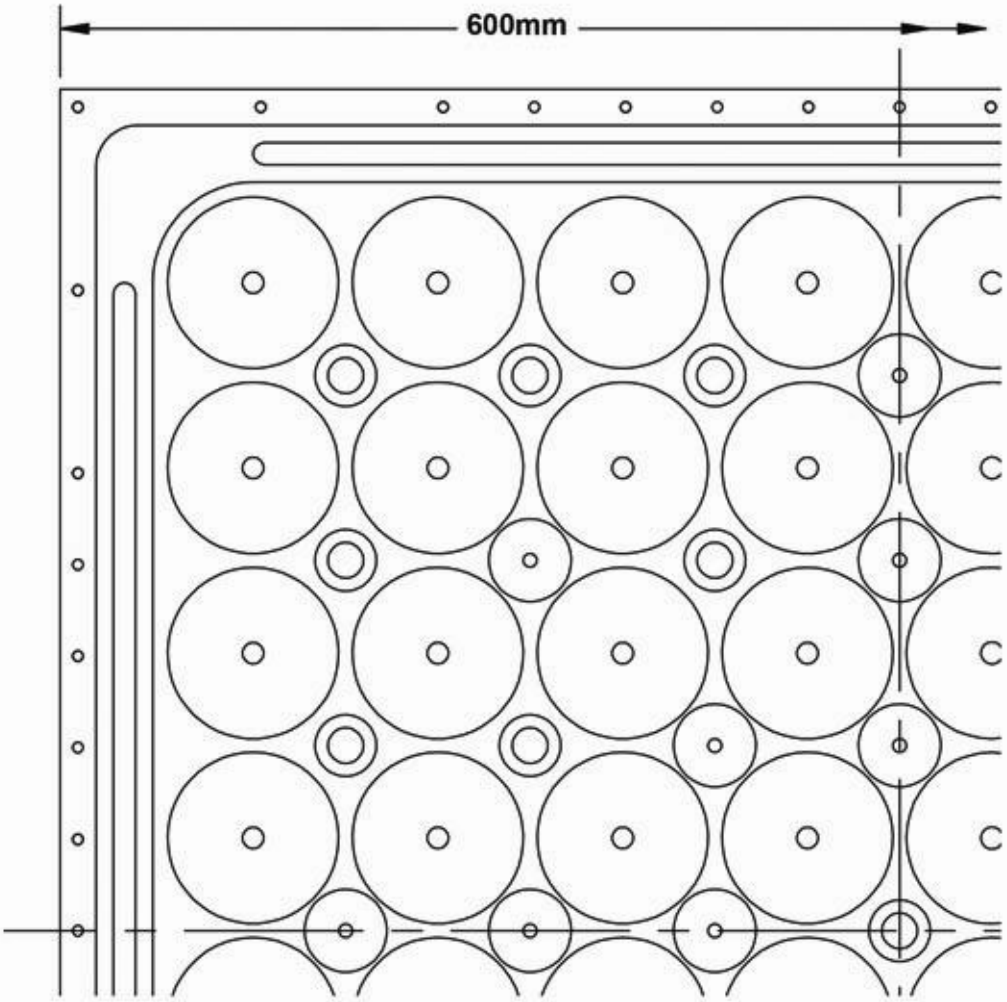
Panel Details for Concore Cementitious Panels

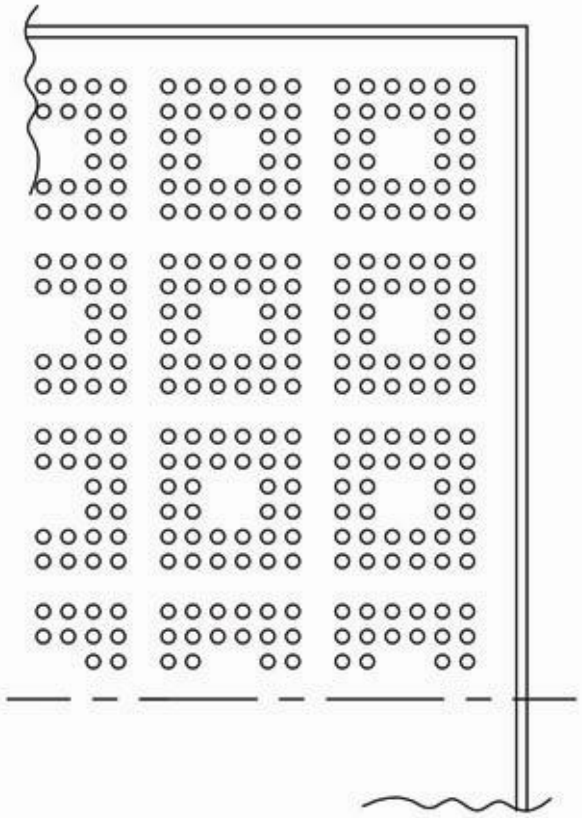


PARTIAL SECTION VIEW

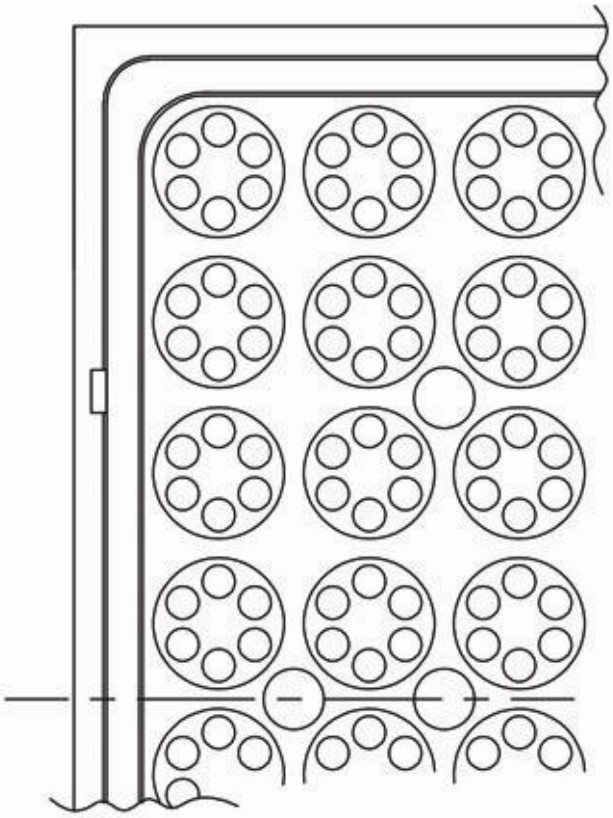


PARTIAL BOTTOM VIEW

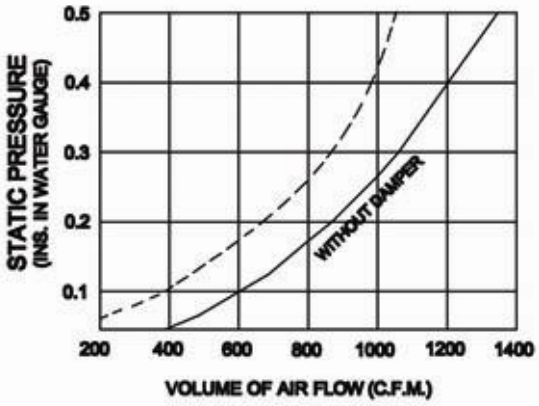
Perforated Panels for Concore Cementitious Panels



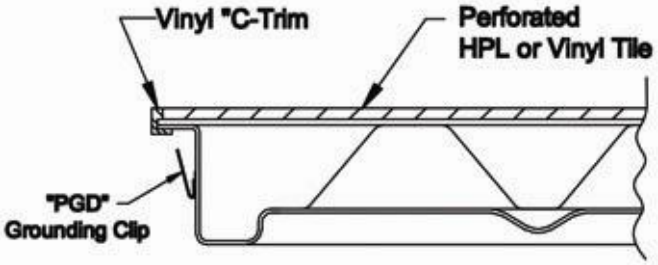
PARTIAL TOP VIEW



PARTIAL BOTTOM VIEW



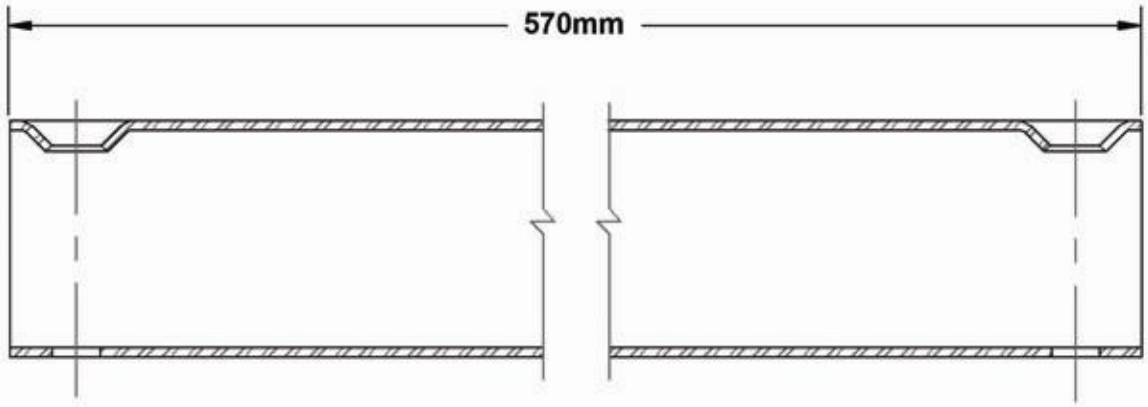
AIR FLOW CHARACTERISTICS



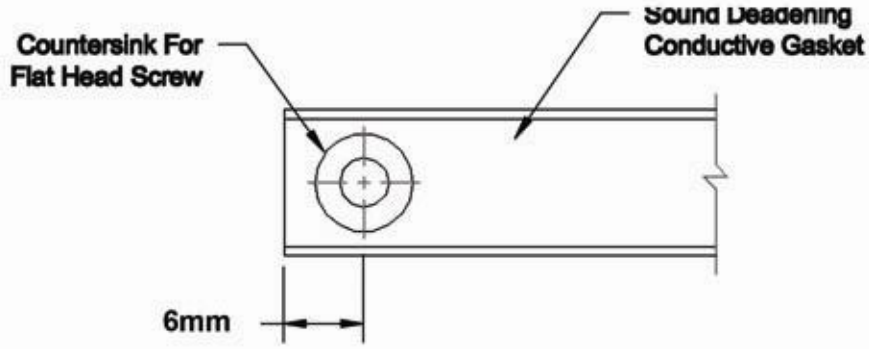
PARTIAL SECTION VIEW

Panel Is Protected With
Powder Coat Epoxy Paint

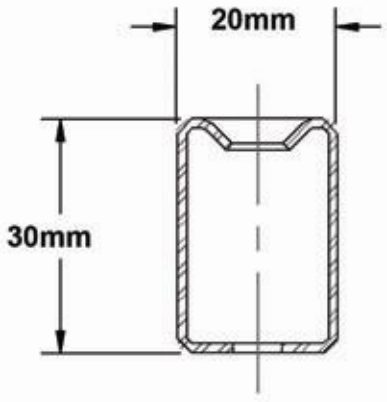
Rigid Grid Stringer Detail for Concore Cementitious Panels



SIDE SECTION VIEW



TOP END VIEW



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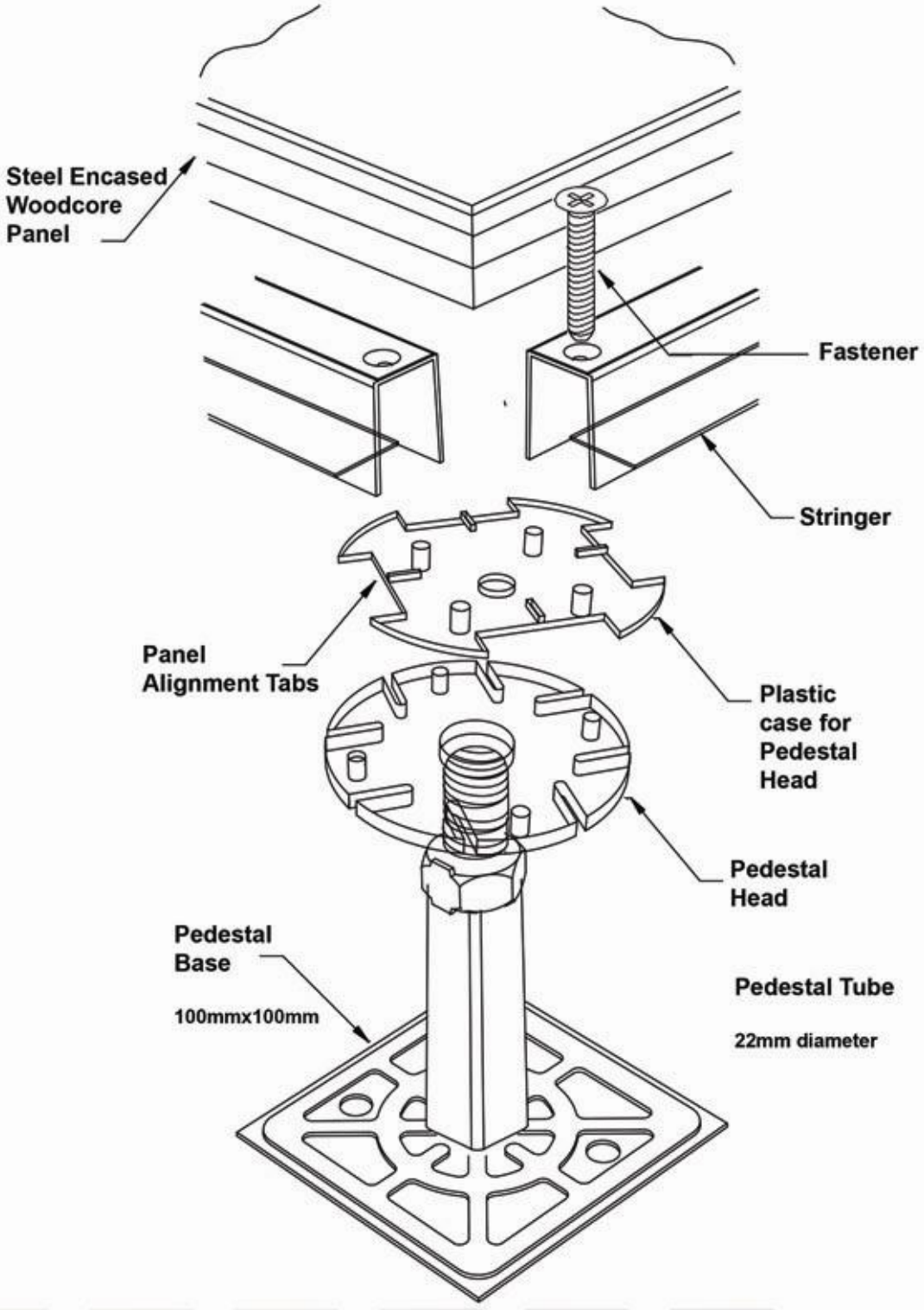
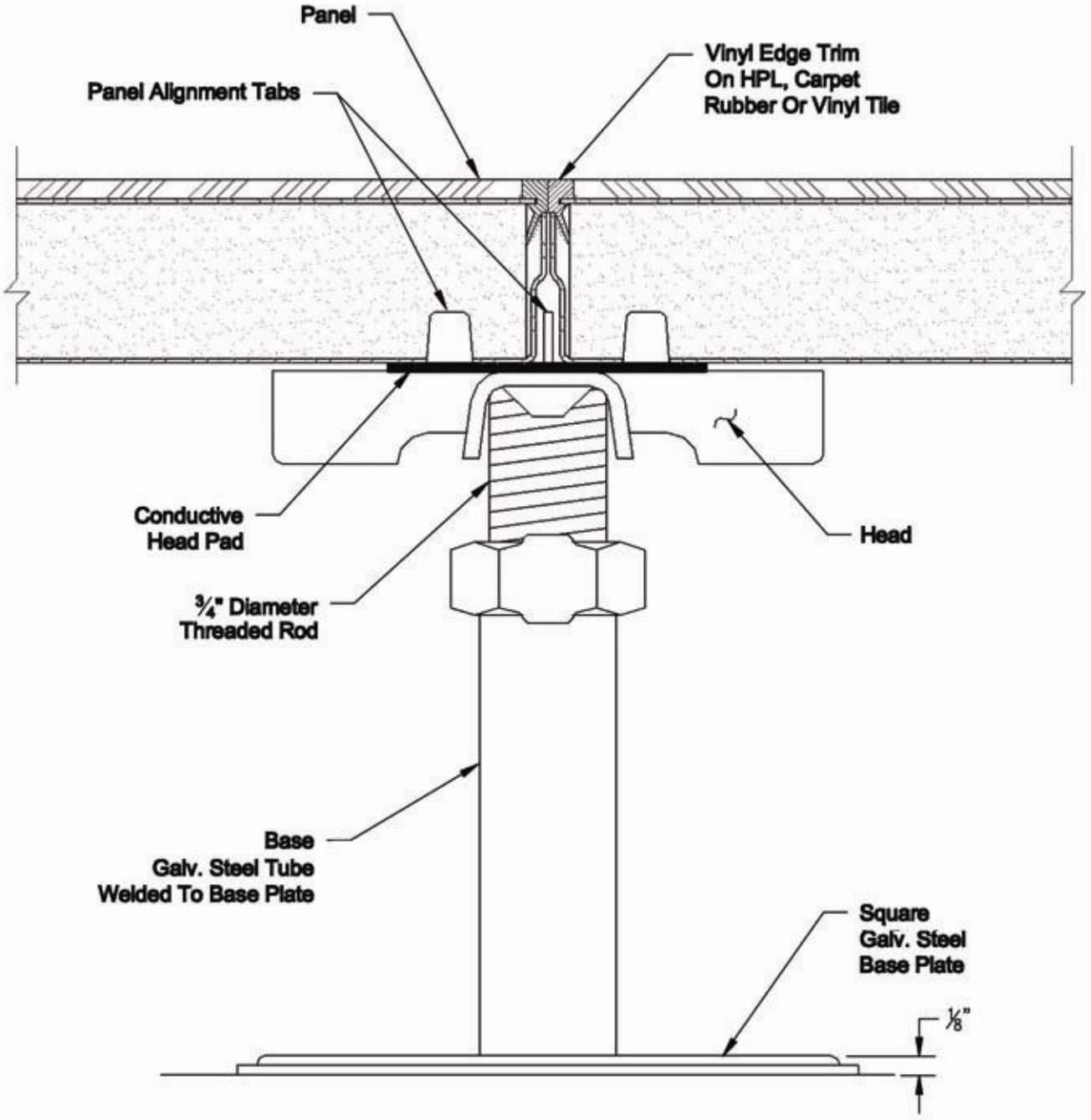
END SECTION VIEW

Rigid Grid Component Attachment for Woodcore HPL Panels

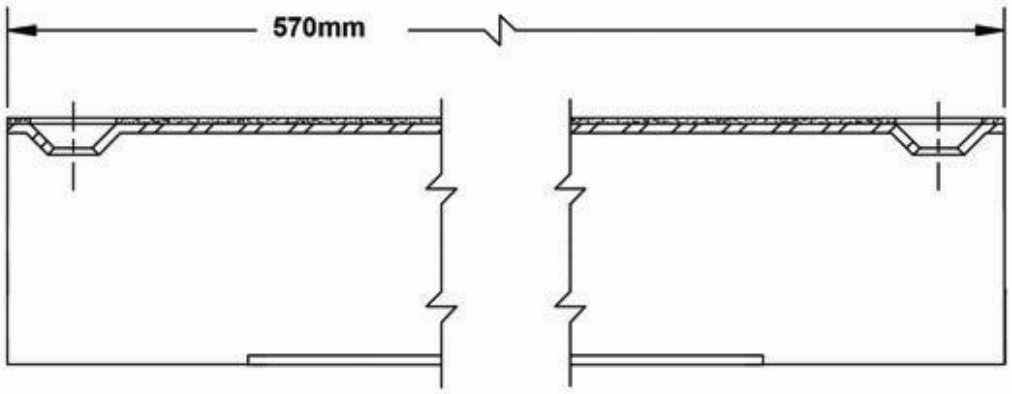


Assembly of Woodcore HPL Panels



SIDE ELEVATION DETAIL

Rigid Grid Stringer Detail for Steel Encased Woodcore HPL Panels



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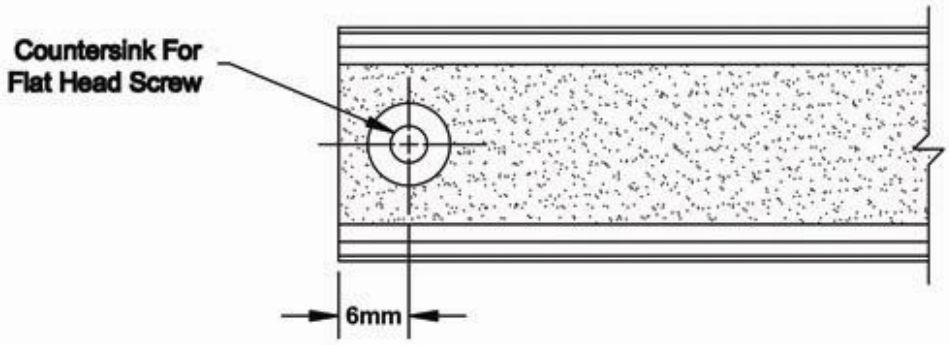
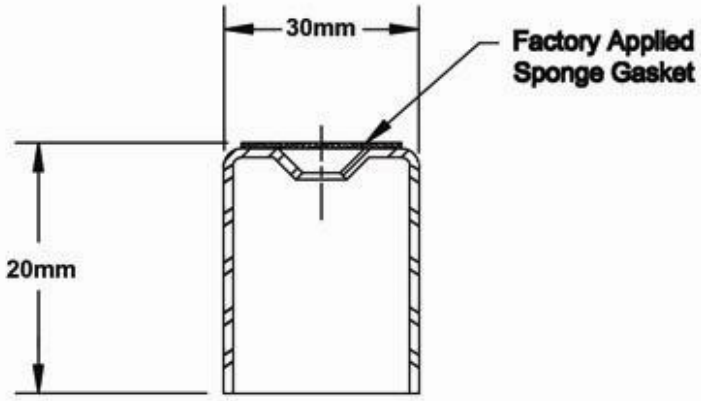
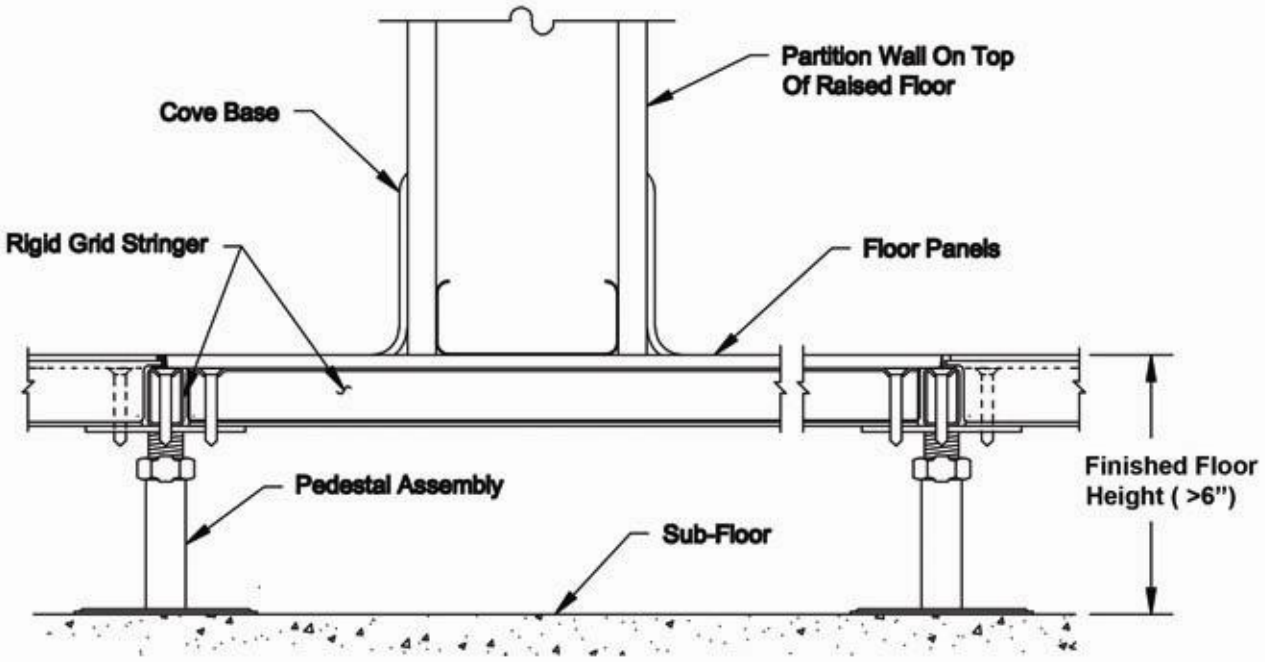


TOP END VIEW

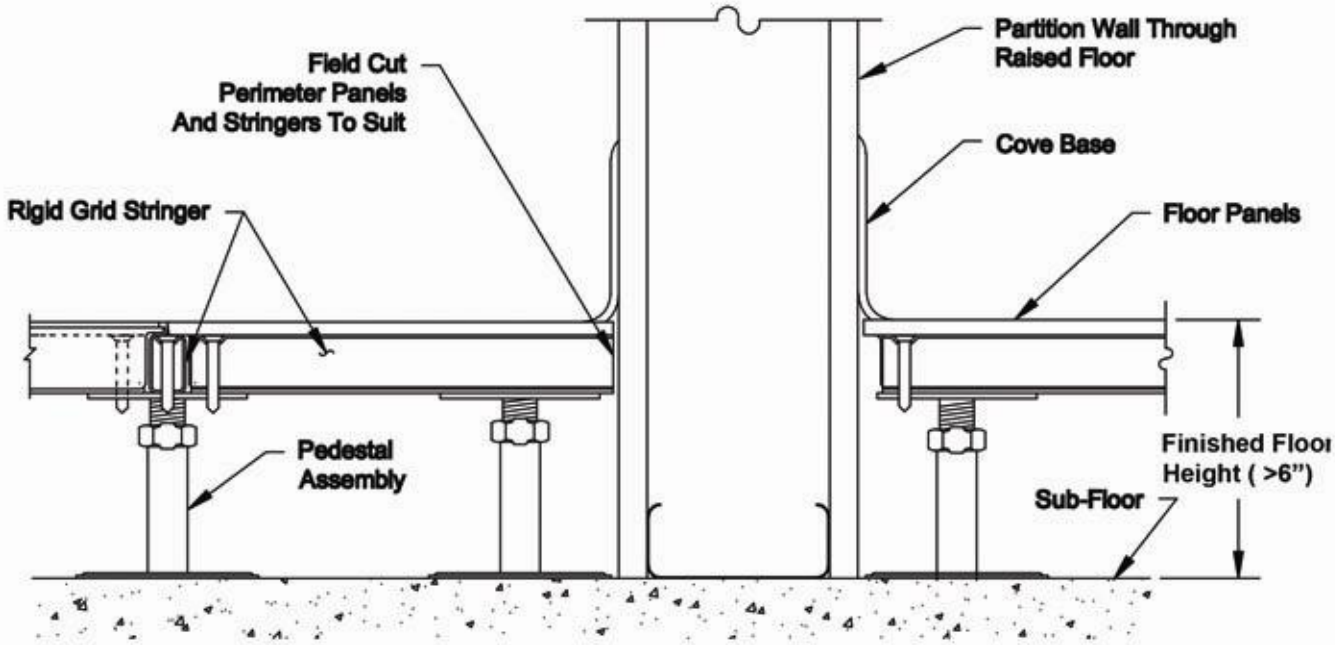


END SECTION VIEW

Wall Partition Installation



PARTITION WALL ON TOP OF RAISED FLOOR



PARTITION WALL THROUGH TO SUB-FLOOR

NOTES

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