



# A Guide to Aluminium Partition Systems

Key Functions, Features and Design Considerations

## INTRODUCTION

In the ever-evolving field of interior architecture, aluminium partitions have emerged as invaluable solutions that combine aesthetics, functionality and adaptability. Owners and tenants who want flexibility can use partitions to reconfigure a large office into multi-functional work zones. Businesses can use partitions to increase productivity by creating individual work spaces that block out distractions. Partitions can even be used to elevate a space by incorporating unique geometry, decorative elements and large expanses of glazing.

Aluminium partitions, especially aluminium-framed solutions, are preferred for commercial projects because they are more resilient and adaptable than other partitioning methods. They can be deployed in a variety of configurations, dimensions and profiles. With the right choice of pivot, hinged or sliding doors and clear, opaque, reeded, or acoustic glazing, requirements for access, privacy, soundproofing and safety can all be achieved.

This paper explores the advantages of aluminium partitions in today's building landscape, providing valuable guidance on the key design considerations that will enable designers to take full advantage of their design and construction benefits.

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## What is a partition?

Non-load bearing partitions are the internal walls that divide rooms within structures. While they may have a secondary structural function, such as supporting ceilings, cabinets or shelving, they primarily serve to support themselves and do not support or transfer principal loads from other building elements.

Framed partition walls, also known as “stud walls”, can be built from timber, steel, or aluminium frames that are covered in boards made of plasterboard, wood, metal or fibreboard. They can be purpose-built or constructed as a modular system and often incorporate openings, glazing, doors, ducting, pipework, sockets, wiring, skirting, architraves and other components.

## Functions of partitions

**Dividing space.** Partitions are used to divide a larger room into smaller, multi-functional spaces. They occupy less space than other types of dividing systems while also being strong enough to support technology

integration, fittings and heavy fixtures. Creating divides in a room is an effective way to separate and define different ‘zones’ for specific purposes.

**Sound insulation.** With the right materials and construction, partitions can provide an acoustic barrier to lessen noise transmission between spaces. For example, partitions may be used to create meeting rooms that both block sound from entering and prevent inside noise from distracting employees outside the room.

**Fire resistance.** Compartmentation is a passive fire protection method that stops smoke and flames from moving from one room to another. In commercial structures, compartments are frequently created using partitions to prevent the spread of flames in the event of a fire.

**Privacy.** Partitions can be specified to provide spatial, visual and acoustic privacy. In a healthcare setting, for example, separate patient rooms can be created using partitions that provide a peaceful, quiet environment that is conducive to healing. In an office setting, partitions may be used to create defined personal spaces that are free from visual and noise distractions.

## Design advantages of partitions

**Flexibility.** When it comes to practicality and design, partitions are incredibly flexible, making them a popular choice among architects and interior designers. They can be installed or removed easily, with little impact on the general construction of the building. They are available in various shapes and sizes, with an even wider range of fixtures, openings and glazing options.

**Cost-effective.** Compared to traditional brick and mortar walls, using steel or aluminium partitions when building interior rooms is a more affordable and durable choice.

**Rapid installation.** In today's fast-paced market, the rapid installation of interior elements is crucial. Metal partitions can be installed quickly and minimise disruption in the event of changes to layout or space usage.

**Easy maintenance and repair.** Compared to traditional brick and mortar walls, partitions are significantly simpler to maintain and repair. Only the damaged partition needs to be replaced or repaired in the event of damage, rather than entire building elements.

## Why aluminium?

Aluminium-framed partitions are more durable and versatile than other types of partitioning systems, making them the go-to choice for most commercial spaces. However, not all metal partitions are the same; most on the market are either made out of aluminium or steel. The tensile strength and corrosion resistance of stainless steel and aluminium are well known. Yet, a variety of other architectural benefits make aluminium a preferable material for many commercial applications.

Aluminium is durable and inherently corrosion resistant, ensuring the partition can withstand years of regular usage. The highly resilient aluminium oxide layer

protects the metal from corrosion by renewing itself when damaged, whereas a steel frame that has been scratched or damaged is susceptible to rust.

In contrast to stainless steel, which is a hard, heavy metal that can be difficult to work with, aluminium is soft, lightweight and exceedingly malleable. Aluminium can be used as a lightweight alternative for many steel-based components due to its superior strength-to-weight ratio. The material's light weight enables faster installation and lower transportation costs.

Aluminium partitions easily allows for differential deflection between floors, which is not easily possible with some forms of construction like timber or masonry. Additionally, due to its light weight, there is lower imposed loading on suspended slabs and flooring systems, thus possibly reducing structural costs. The reduced weight also means less wear and tear on components such as sliding doors.

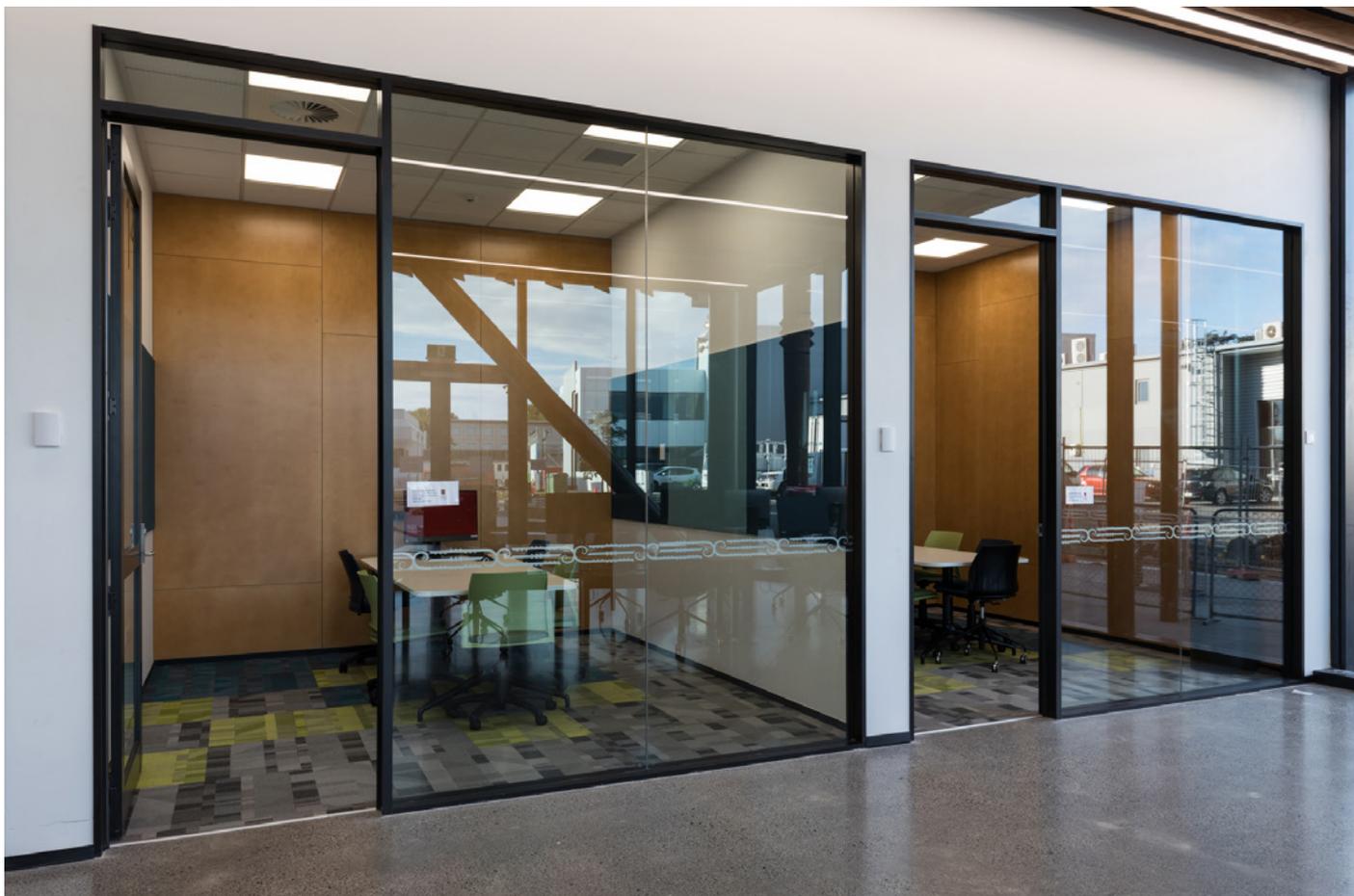
## Frame finishing

Designers can achieve either a modern or traditional look with aluminium partitions. The frame can be anodised or powder coated to create the desired aesthetic and to shield the partition system from elements that could degrade it.

An electrochemical process called anodising transforms the metal surface into an anodic oxide finish that is visually appealing, long-lasting, and resistant to corrosion. This aluminium oxide is completely merged with the underlying metal substrate rather than being applied to the surface like paint or plating, making it resistant to chipping and peeling.<sup>1</sup>

Powder coating is the electrostatic application of dry powder followed by curing in heat or ultraviolet light to create a durable, aesthetic finish. This finishing technique is well-known for creating a hard coating that is more resilient than conventional paint.

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## Surfacing finishing

The most common board that is used to clad partitions is plasterboard. Plasterboard walls will require different specifications depending on the level of finish that is required prior to decoration.

According to AS/NZS 2589:2017, "Gypsum Linings - Application and Finishing," there are three different levels of finish for plasterboard. For commercial and residential buildings, plasterboard is typically finished at Level 4, which allows for conventional painting and decorating.

## Glazing

Glass is just one of the many infills that may be used in internal partitions. Glass design for internal partitions is covered in NZS 4223.3:2016 "Glazing in buildings - Part 3: Human impact safety requirements". This Standard specifies minimum requirements for glass selection and glazing in locations subject to human impact and safeguarding against falls.

Some types of glass have distinctive performance properties. Acoustic glass, for example, is specifically designed and manufactured to reduce noise levels. Clear, obscured or reeded glass can be specified depending on visual privacy requirements.

Glass manifestation is another effective method to achieve visual privacy, whether it is an applied film, a decorative interlayer, or switchable glass.<sup>2</sup> Manifestation may also be used to make glass more visible, preventing injury through accidental collisions.

## Door options

Internal aluminium-framed partition systems can incorporate hinged doors, pivot doors, sliding doors, and other types of openings. There are doors to meet the majority of preferences, practical requirements and budgets.

For locations where the door leaf would obstruct heavily trafficked areas, sliding doors are the preferred space-saving option. Another option for high-traffic applications are pivot doors that have two spindles that rotate, one at the bottom and the other at the top, creating an axis of rotation for the door.

Hinged doors have their centre point flat against the wall where the hinge is installed. While they are a popular option, designers will need to account for the space the swinging door would take up.

Modern door solutions come with special features, including soft-closing and self-closing mechanisms and automatic open and close systems. Full glass doors can be specified to brighten up and optically enlarge spaces.

## Soundproofing

Proper partition design and installation can lessen sound transmission between spaces. The key design strategies to enhance sound insulation include:

- Insulated partitions with sound-absorbing properties can absorb sound waves and prevent them from transmitting to adjacent spaces.
- Sound transmission through gaps around doors and windows can be stopped with proper sealing.
- Partitions made to decouple from the building structure prevent vibration from passing through walls.

It is crucial to take into account the possibility of “flanking” across the spaces above and below the partition, especially if a raised floor or suspended ceiling is present.

## Fire resistance

Under the NZBC, fire rating performance is referred to as FRR (Fire Resistance Rating) and is measured in minutes. For example, FRR 30/30/30 means a fire rating for 30 minutes under the three criteria: structural adequacy, integrity and insulation. This testing criteria refers to AS/NZS 1530.4.

When partition systems are tested in accordance with AS/NZS 1530.4, the specimen is made up of the building element (wall or floor), any services that run through it (such as pipes or cables), the products themselves, and

the specific installation method. FRR applies to the whole assembly or system rather than its individual components.

## Seismic bracing

Buildings experience ground shaking and seismic forces during an earthquake. These factors may weaken internal partitions. If they are not designed correctly, they could collapse or sustain damage. Partitions should be seismically restrained to prevent this from occurring as required by both NZS 1170.5 and AS/NZS 2785.

Bracing the top of the wall to the underside of the floor structure above is the most typical method. The floor structure should be sufficiently designed to provide lateral support to partitions and other non-structural components, such as building services. Partition walls must not be braced to the ceiling grid as per AS/NZS2785

## Sustainability

Manufacturers voluntarily disclose product information on Declare® labels to help designers and specifiers assess the human and environmental impacts of different products. These labels list all product ingredients and indicate substances of concern using a straightforward colour-code scheme. Further details are given regarding the product’s final assembly locations, life expectancy, end-of-life options, and compliance with Living Building Challenge® requirements.<sup>3</sup>



## Aluminium Partitioning Systems from Potter

Potter Interior Systems specialise in aluminium interior partitioning and supplies a comprehensive range of wall systems, including Rondo steel stud and steel track systems. The New Zealand based company offers numerous configurations and design options for complete aluminium partition systems for offices, retail and commercial installations.

### Project-specific solutions

- The **A Series 105-132 Aluminium Partition System** is the perfect choice for both plasterboard and glazing applications. This range offers an impressive array of features, including seamless integration with various wall structures, three standard profile sizes, glass thickness options and compatibility with a wide range of door thicknesses.
- When it comes to creating functional and aesthetically pleasing spaces, the **C Series 45 Aluminium Partition System** has been designed specifically as a cost-effective commodity system without compromising on quality or style. Thanks to its slim profile and versatile design options, this system can help you achieve a sleek and modern appearance.
- **DS Series Doors and Sliders** are designed to fit with other Potter aluminium partition suites. Available in 38mm thick doors only, they are an ideal solution for any commercial environment to create either an open space or a completely new room.
- **DF Series Aluminium Partitions** have been designed to help with exposed full height aluminium partitions in modern office designs that tend not to have a traditional panel ceiling. The DF Series can also be used as a base build wall starter that will

allow movement between existing structures and internal partitions.

- **E Series 105-132 Aluminium Partitions** provide an edgeline single or twin glazing design to provide a clean front profile or twin glass option.
- **Soho Series Aluminium Partitions** is an innovative alternative to traditional glazing that allows you to achieve a stunning industrial-inspired aesthetic without compromising on quality. Versatility is at the heart of the Soho series, offering five profiles that seamlessly integrate with Potter's other suites.

### Seismic applications

Potter offers complete seismic solutions with their wall and ceiling systems, working with design and engineering professionals to establish project-specific, cost-effective solutions. The company uses TRACKLOK® for both new builds and retrofits, which connects directly through the partition head, separating wall from ceiling. This product has been tested to provide structural and seismic performance for internal non-structural walls and glazing lines.

### Bespoke and custom partitions

Potter Interior Systems excel at developing custom aluminium profiles for unique designs. If you have a unique design challenge that requires a new take on aluminium partitioning, contact Potter at [specsupport@potters.co.nz](mailto:specsupport@potters.co.nz).

### Declare

Potter's aluminium partition suites carry Declare labeling.



## REFERENCES

- <sup>1</sup> Aluminum Anodizers Council. "What is Anodizing?" AAC. <https://www.anodizing.org/page/what-is-anodizing> (accessed 23 October 2023).
- <sup>2</sup> Designing Buildings Ltd. "Glass manifestation." Designing Buildings Wiki. [https://www.designingbuildings.co.uk/wiki/Glass\\_manifestation](https://www.designingbuildings.co.uk/wiki/Glass_manifestation) (accessed 23 October 2023).
- <sup>3</sup> International Living Future Institute. "Declare." ILFI. <https://living-future.org/declare/basics> (accessed 23 October 2023).

All information provided correct as of November 2023