

WALL AS A FLEXIBLE ELEMENT

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ABSTRACT

Flexibility is defined as the capacity of a building to undergo modifications and accept changes of function with limited structural interventions

It defines flexible construction as: ‘Drylining or horizontal or vertical supporting construction consisting of studs or joists, including linings and optional insulation’ It in relation to a flexible partition.

‘A metal stud drylined partition is defined as a flexible partition in a fire test.

1.INTRODUCTION

1.1 FLEXIBILITY

Flexibility design flexibility allows the building to evolve as users need change and Its application spans between freedom of the choice and expression and in the reality of totally controlled spaces. In the case of affordable housing projects, in the massing is done in such a way that it is serves mere functionality.

The concept of flexibility and the design allows it to adapt rather than stagnate, it also allows to transform over restrict, it allows interaction over inhibits. Very often it is flexibility is measured as the amount of the change that occurs and the degree of the permanence of that changed.

In architecture, flexibility is malleable, and movable, and it is multipurpose. It is further classified into movable partitions, multi-use spaces such as the open-plan offices and high-capacity service voids, and the room’s ability to expand it to.

Modular systems come in more pieces and need more labor onsite to be assembled. The advantage of these systems is that they are typically parametric, meaning you are not limited to standard sizes set by manufacturers. You are able to specify to the 1/32”, making them extremely tailored to your environment. You also have more options for combining different materials on a surface, such as steel skins, whiteboards, and integrated technology or LED lighting.

2.Types of demountable walls they are -

2.1 There are two main types of demountable walls -

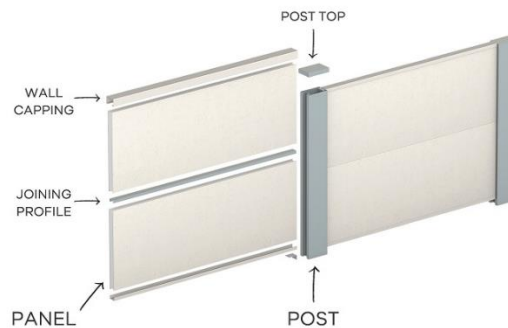
They are the one unitized and the other modular, which differ in how they are constructed and the benefits they offer to user.

Unitized wall systems is arrive on site as pre-fab units/panels that just need basic assembly steps. The advantage of these systems are they can be installed, detach and that is reconfigured very quickly and easily.

Unitized wall



Modular wall



3. Demountable Wall

Demountable glass partitions deliver superior acoustical performance for increased productivity. These wall systems also offer the remarkable and cost saving during the initial measure of construction phase and till over the period of the space, as they enable easy reconfigurations when business needs change

In our world of constant change, businesses no longer must choose between visual privacy and the freedom of flexibility as a flexible alternative to traditional construction, modular office walls have been become common place in the built surrounding.

With low to the trim options and butt glazing, you can also create an elegant, streamlined. Office walls let in the natural light rays come inside, and creating a transparent aesthetic with in open plan surrounding in the building.



3.1 Features of Demountable Walls -

The followings are the features of demountable wall systems they are -

- I. They are a type of partition that can be smoothly installed and removed simply.
- II. It is made of wood, glass, and metal
- III. It is cost-effective way to create additional space in buildings.
- IV. Relatively easy to install and remove assuredly.
- V. It can also create temporary or semi-permanent divisions between work areas
- VI. Convenient in a variety of materials
- VII. It can be used in offices schools and other commercial spaces
- VIII. Come with all the needed hardware and the instructions
- IX. Simple installation process is easy to do

3.2 The Benefits of Demountable Walls

There are many benefits to using demountable walls in your office space. Demountable partitions are a cost-effective way to create additional space without the need for major construction. They can also be used to create temporary or semi-permanent divisions between work areas, which can be beneficial for companies that are expanding or downsizing. Demountable wall systems are also relatively easy to install and remove, which makes them a convenient option for office spaces that need to be reconfigured frequently.

3.4 The Different Types of Demountable Walls

There are a few different types of demountable walls that are available on the market. The most common type of demountable wall is the wood partition. Glass partitions provide a modern look and can make small spaces appear larger. Wood partitions are a popular choice for office spaces because they are relatively inexpensive and offer a classic look. Demountable glass partitions are another popular option for office spaces. Metal partitions are also available, but they are typically less popular because they are more expensive and can be more difficult to install.

3.5 The Installation Process of Demountable Walls

Positioning a demountable wall is a relatively easy process. Most demountable walls come with all of the necessary instrument and instructions. Once you have all of the materials, you can also see these following steps to install it the demountable wall systems are -

- First, you need to know the measure the space where the partition will be installed.
- Then, you will have to need to mark the location of partition on the floor.
- Next, then you will have to install the track for the partition.
- Once the tracks are in the place, you will need to know the hang the panels on the track.
- Finally, you will need to know the attach the trim to the edges of the partition.

3.6 The Maintenance of Demountable Walls

Demountable walls are relatively easy to maintain. If the partition is made of wood, you will need to dust it regularly and polish it every few months. If the partition is made of glass, you will need to clean it with a glass cleaner. If the partition is made of metal, you will need to wipe it down with a damp cloth.

4.Reconfigurability | How often do you plan to reconfigure your space?

If you plan on reconfiguring once a year and want the fastest installation, a unitized system (like Privacy Wall), is a great option. If you plan to reconfigure once every few years, a modular system (like V.I.A.) will work for you.

5.Wall depth | How do you want to run power and data throughout the space?

If you want to run power and data through the walls, you need a system with enough wall thickness to support those utilities. If you are using raised access flooring to run power, data, and even HVAC, then you can go with a thinner wall system if you desire

6.Sustainability | How important is well-being and environmental protection?

If you care about protecting the environment, then I have good news – all of the movable wall systems you might consider are much better for the planet and for your employees than traditional construction!

Look at how much recycled content is in the system you are considering, whether it can be recycled at the end of its long life, and whether it is free of PVCs POCs and off-gassing.

7.Aesthetic | What are you trying to achieve visually in your space?

Whether you are looking for a widely transparent workplace with subtle private elements, or want to infuse your space with your brand and culture with bright, bold graphics and film, there is a movable wall system to meet your need. Butt-glazing (like with Lite Scale glazing) offers wider expanses of glass for a sleek, elegant look

8.Price | What is the return on investment you are looking for?

Perhaps the most important consideration is whether the solution fits your budget. Keep in mind that although movable wall systems are sometimes a little more expensive up front than traditional construction, over the long term they pay off in a much higher ROI. Each time you reconfigure, you are saving time, labor, material, and disposal.

9.Category | What category matches how often you want to reconfigure?

As described above, the category of wall system you choose typically goes hand-in-hand with the frequency of reconfiguration you anticipate. There are two main types of movable walls: unitized and modular. Unitized walls arrive on site as a unit assembly and typically install very quickly and can be easily reconfigured using less labor. Modular wall systems usually come in pieces and need to be assembled on site. These types of wall systems can require more labor and coordination from a logistical standpoint

10. Technology Integration | How important is it that the wall accommodate the latest technology?

Some modular systems (like V.I.A.) specialize in integrating all different kinds of technology within the wall, including LED lighting to support videoconferencing. This creates a sleek, modern aesthetic while maintaining proper venting and maintenance access for the devices. Unitized systems (like Privacy Wall) don't enable you to integrate within the wall, but do offer surface-mount options.

11. Surface flexibility | What different kinds of surfaces would you like to have in your space?

Whiteboards? Tackable fabric? Magnetic whiteboards? Integrated displays? Unitized panels have fewer options when it comes to surface flexibility, but with the trade-off of faster reconfigurations. Modular systems, in contrast, usually have a much broader variety of surface options.

12. Privacy | How important is visual and acoustical privacy?

Visual privacy can be achieved using solid panels, a patterned film on the glass, or a film that blocks screen content from the view of passers-by. Acoustical privacy can be achieved in varying levels depending on the materials used in the wall system. Glass can achieve high STC ratings when double-glazed, but the highest privacy is achieved with acoustically treated solid panels. Solid panels have the added benefit of adding built-in visual privacy in addition to absorbing sound.

13. Glazing | What features are most important?

Even if you are using solid panels, you are most likely going to include some glass for transparency and natural light. Single glazed is the most basic option, and offers the most modest acoustic properties. Double glazed is thicker, and therefore, more soundproof, offering higher STC ratings.

Double glazed also expands your options for attaching technology or other structural elements within the space. Butt-glazing is when two panels of glass are joined without additional framing, creating a seamless look. If the aesthetic of butt glazing is important to you, be sure to see which systems offer it

14. Convertibility

It deals with changing functions along with some construction. This requires some permanent change.

In practicing architecture, the advent of flexibility and design must be foreseen in the planning stage itself. Feasibility, research, later projections, and long-term plans must be pre-thought and incorporated in the design itself.

Once the objectives of flexibility Unknown the design team can review and propose a plan that fits in the budget. Thus, making it sustainable and cost-effective.

The horizontal stress of tied reinforced layers developed in three phases: bending, stretching–bending, and stretching as the external load increased.

Field testing was conducted to measure the lateral earth pressure of a geocell flexible retaining wall constructed on an expressway in central north China's Shanxi Province. Geocell flexible retaining wall is a new type of retaining structure constructed by stacking three-dimensional network geocells filled with soil or gravel

It was shown that the deformation of flexible retaining wall was significantly influenced by the width of wall, distance between adjacent reinforced layers, and foundation modulus.

The width of wall affected the stress level noticeably. The horizontal displacement of reinforced layers increased as the external load applied on the fill behind the wall increased.

The horizontal stress of tied reinforced layers developed in three phases: bending, stretching–bending, and stretching as the external load increased.

15. Conclusion

Demountable walls are an ideal solution for office spaces that need to be reconfigured frequently. They are easy to install and remove, and are available in a variety of materials. Demountable partition wall systems are a cost-effective way to create additional space without the need for major construction.

16. References

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