

Modular Interior Partitions in Commercial Housing: A Case Study

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The ability to modify an interior space with ease and reasonable cost is beneficial to designers, owners, and end-users. Modular interiors are not a new concept. Modular interior partitions can come in the form of Japanese Shoji screens, as well as folding walls that would be found in a convention center. While not new in concept, the market for products that allow partitioning an interior space with ease appears to be growing with the introduction of innovative products and solutions. This paper will focus on two student housing projects in San Luis Obispo, California, with regards to their design and decision making for interior partitions. Additionally, this paper will highlight new and innovative modular interior products. The first project in focus, the Academy Chorro, is a 27-unit mixed-use development with 1,600 square feet of retail space. The second project, located at 790 Foothill, also in San Luis Obispo is being built by the same design team and has incorporated lessons learned when choosing the best possible solution for partitioning rooms. Feedback from residents at the Chorro project found that the glass partitions used provided poor sound deadening characteristics. The design team took this into account when designing the development at 790 Foothill. Ideally, fully framed walls between rooms would be placed, however, it was learned that the city planning commission would not approve this due to the implications of adding to the bedroom count. Adding to the bedroom count would have implications throughout the project, making it unfeasible. The proposed improved solution for partitioning bedrooms at 790 Foothill has undergone several iterations.

Key Words: Key Words: Modular, Acoustic, Bedroom Count, Planning, Removable

Introduction

Modular interior partitions serve a variety of purposes within a space. Whether it be an event space, office, or living area, modular partitions of all forms must meet one performance requirement: the ability to be removed or reoriented. The Academy Chorro is a mixed-use student housing project completed in 2018 serving the housing needs of California Polytechnic State University, San Luis Obispo. Currently, tenants can look to pay upwards of \$1400 a month, including parking costs, to live there, making it one of the most expensive student housing options in the area. 790 Foothill is also a mixed-use development located down the road from The Academy. The same team designed both

projects and both projects face the same unique problem: finding the ideal method of partitioning one bedroom into two. The final product chosen for The Academy was aluminum framed sliding glass closet doors.

What the Industry Offers

The options appear to be limited when it comes to modular interior partitions. Factors to be considered when choosing a solution include, but are not limited to, light penetration, sound insulation, cost, and aesthetics. Sound insulation in this research will be measured by STC rating. STC rating refers to a product's sound transmission class. STC ranges from 25, meaning sound easily travels through a product, to 50. STC rating of 50 means a product has received the highest class rating available.

STC	WHAT CAN BE HEARD
25	Normal speech is easily understood
30	Normal speech is audible but not understood
35	Loud speech is understood
40	Loud speech is audible but not clearly understood
45	Must strain to hear loud speech
50	Loud speech is not audible

Figure 1: STC Ratings, “What can be Heard”

Source: NanaWall

Sliding glass partitions are a popular option for dividing space. Sliding glass partitions are designated products that serve as modular walls but are also often repurposed sliding closet doors, as seen in the 22 Chorro project. Typically, glass partitions will have an STC rating “ranging from the high-20s to mid-30s, with its score increasing as glass becomes thicker” (Dillmeier). This would make glass a mildly effective sound insulator, especially when compared to a traditionally framed wall which would achieve an STC rating between 40 and 50. Glass partitions, unlike other options, struggle with light penetration, which could be undesirable depending on the application. Sliding glass doors also do not allow for a seamless, constant surface, meaning there are inevitable gaps between each panel which allow for sound to transmit between them. Acoustic sliding panels or doors are commonly seen in commercial spaces such as convention centers and educational facilities. Acoustic panels can easily

be rearranged or removed. These products have STC ratings that range from 35-50, depending on specification.

Newer, innovative products can be considered for partitioning a space. Versare, a company specializing in modular interior spaces, offers two products that are of interested for modular interior partitions. The EverBlock system is comprised of stackable blocks, like Legos. According to a Versare sales representative, this product is mostly used to partition commercial spaces such as offices and temporary spaces. The EverBlock system is not suitable for floor-to-ceiling installation and is not likely to be an ideal solution for partitioning rooms in a commercial housing project. Versare also offers a more practical product, EverPanel, which has a greater range of use cases and achieves an STC rating of 28 according to the company's website.



Figure 2: Partition Options
Source: The Sliding Door Company, EverBlock, AEG Teachwall

Methodology

The objectives of this case study can be seen below:

- Explore the logic behind the choice of partition for The Academy Chorro
- Explore the reception/outcome of this decision
- Explore lessons learned from the perspective of the owner
- Explore the logic behind the choice of partition for the project at 790 Foothill

Much of the research conducted for this project was qualitative. Researching the characteristics and properties of the installed partitions at The Academy Chorro required interviewing several current and former tenants. Additionally, qualitative research for this case study included a phone interview with a sales representative from EverBlock. For information regarding the design and decision-making process for interior partitions for the 22 Chorro project and the 790 Foothill project, ongoing discussions and communication with CSI Project Executive Brick Robbins took place. Both projects

were designed by the same team and faced challenges regarding partitioning rooms in a fashion suitable for the San Luis Obispo City Planning Commission.

Case Study

The Academy Chorro, also referred to as “22 Chorro,” throughout the paper begins the focus of the case study. Sliding glass doors were used to partition one bedroom into two in the housing units at the mixed-use development. Requirements from the city that would have implications on the scope of the project were the result of this decision. Lessons learned from the 22 Chorro project were applied to the 790 Foothill project when choosing a method of partitioning bedrooms.

During design and permitting processes for the 22 Chorro project, the development was objected by certain members of the San Luis Obispo community. According to the San Luis Obispo Tribune, a local newspaper, several community members formed their objections to the development by claiming “that the project would create parking congestion in the neighborhood. They also contended that the maximum building height of 43 feet blocked views of hills”. This objection was later appealed by the city planning commission, allowing the project to move forward.

Specifying Partitions for 22 Chorro

Apartments found at the mixed-use development at 22 Chorro Street are advertised as four-bedroom units, with two separate rooms portioned into four using a sliding glass closet door. It was found that the choice of these glass doors was not an ideal solution from the perspective of the design team and the owner but rather was the result of building code and planning politics. In an interview with Brick Robbins, Project Executive for CSI, the general contractor on the project, it was learned that the ideal route for partitioning these bedrooms would be to use traditional framed walls. However, this would not be possible since a ‘full wall would classify each room as a separate bedroom and would double the number of bedrooms, causing other planning requirements to change.’ This meant that the plans must show each unit as having two bedrooms. The conclusion made by the owner was that it would be unfeasible to partition rooms with a full wall due to other possible implications which the planning commission could mandate.

This leads to the next challenge of finding the best method for partitioning these rooms while maintaining the city’s definition of one bedroom. To comply with this requirement, the solution for partitioning the room must be “removable.” To be considered removable, a maintenance person or facility employee must be able to remove the partition with relative ease. In short, as long as no construction or professional trade is needed to remove the partition, it will be acceptable. According

to Robbins, this meant that the “cheapest, simplest solution to divide the rooms” was needed. As a result, sliding glass doors, typically used as closet doors, were chosen to partition these rooms.



Figure 3: Floorplan with Partitions Shown

Source: The Academy Chorro

Feedback from Tenants

This decision to use sliding glass doors to partition the rooms allowed for the project to move forward. These four-bedroom units would now, on paper, be two bedrooms, but each “bedroom” would have its own door to enter and exit, fire sprinklers, and smoke detectors, essentially making it a separate room. This decision would come at a cost to tenant satisfaction. After interviewing several current and former tenants of the Academy Chorro, two complaints were consistently brought up. Most notably, the poor acoustical properties of the partition were cause for concern. Residents reported that they could “hear any conversation”, “footsteps, drawers opening, typing on a keyboard” from their neighbor on the other side of the glass. One testimony from a former resident sets a scene, “sometimes I would hear a phone ringing, thinking it was mine, only for it to be my roommate’s phone ringing on the other side of the glass wall”.

Additional complaints regarding the glass partition related to light penetration. Although the glass is frosted, this does not entirely prevent light from showing through. One former tenant claimed that “it was difficult to sleep when the light was on in the other room”. These gripes were often paired with the price of rent. Tenants claimed to be paying over \$1400 a month, making it one of the pricier options for students, for what was advertised as a private room.

Lessons Learned

This feedback was considered when designing the new development at 790 Foothill. Like the Academy Chorro, the 790 Foothill project is a mixed-use development with housing and retail on site. This meant that the same constraints regarding bedroom count would need to be considered off the get go. According to Robbins, the “same partitions were specified but the owner recognized that these were a problem and is looking for a solution”.

With this feedback in mind, other options for partitioning the bedroom were looked at. The factors considered for 790 Foothill were no longer cost-related, and priorities have shifted to ensure the highest customer/tenant satisfaction within the planning commissions constraints. According to

Robbins, all options are to be considered cost neutral, as each would cost roughly the same to install, even when pitted against a traditional full wall. Thus far, three iterations of this solution have been considered, with the latest likely coming to fruition during the finish phase of construction.

The first option was the same sliding glass door system as specified in the 22 Chorro project. However, due to the poor reception of this product as a means of partitioning a room, other solutions were investigated. The next possible choice was to build out a pocket door to allow for more of the wall to appear to be full, and in function, allow for the doors to be closed and folded into this pocket. However, this was not approved by the city of San Luis Obispo since it was viewed as having too much of a permanent wall in place, therefore not being easily removable. Other easily removable options were explored, leading to sliding acoustic panels being the frontrunner option. These panels will allow for the acoustic properties of the partition to be improved while solving the issues related to sliding glass doors. Acoustic panels achieve an STC rating in the high 30s to high 40s. This would be a significant improvement over the glass partitions, which are rated on average in the low 30 range.

Conclusions & Closing Remarks

Each modular interior partition solution has unique benefits as well as drawbacks. Factors to be considered when specifying an interior partition include light transmission, sound insulation, cost, and ease of configurability. It appears that modular interior partitions for a commercial residential space such as the 790 Foothill project and the 22 Chorro project focused on in this paper may not be chosen as a direct result of an owner's decision. In these cases, the choice to opt for a modular partition that could be easily removable is a result of circumstance related to city planning and local regulations. The market for modular partitions offers a variety of choices such as sliding glass doors (repurposed as walls), sliding acoustic panels, stackable blocks, and more. Further research to advance knowledge regarding this topic may dig deeper on the cost factor for specifying interior partitions on a project. This was not a large point of interest for the research on both projects discussed as representatives from the project deemed these options to be overall cost-neutral for the scale they are needed for.

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