



# MOVABLE WALLS



by: **WALLS IN MOTION**

QUICKWALL

# TABLE OF CONTENTS

|  |         |
|--|---------|
| Quikwall Operable Wall System.....                         | 3       |
| Innovation without Limitation.....                         | 4 & 5   |
| Operable Wall Structure.....                               | 6       |
| Stacking (Parking) The Panel.....                          | 7       |
| Performance Specifications.....                            | 8 & 9   |
| Simple As 1, 2, 3.....                                     | 10 & 11 |
| Unlimited Choice of Finish.....                            | 12 & 13 |
| The Significance of Sound Control &<br>Operable Walls..... | 14      |
| Porta-Panel.....   | 18      |



# OPERABLE WALL SYSTEM

Space is what you make it.

Space, sound, sight:

The factors that distinguish a venue or meeting room and lift it out of the ordinary. Over the years, Walls in Motion has become an expert in managing these factors and how they function, individually and as a whole. As you can expect, we've gained a keen understanding of the limitations that come -- and how they can be overcome. Our products are designed around your needs, not the other way around.

In a business that requires broad design vision and precise technical expertise, Walls in Motion excels at both. Through superior construction, we get your walls right the first time yet still we back it up with an extended warranty, service and yearly maintenance program that will keep your walls in top shape and at peak value.

We Make Your Space Work.

**WALLS IN MOTION**



### **PESOS & SENSE: WHY INVEST IN YOUR INTERIORS?**

Walls in Motion is synonymous with quality products, installation and ongoing product support. Whatever the situation, we've come to be recognized as the industry's true specialist by architects, interior designers, contractors, project managers and building owners alike. Our repeat customers trust us to continually upgrade and improve every product.

### **MORE SPACE = MORE PROFIT.**

When you're operating rentable space, every idle square meter is a peso off your bottom line. Operable walls let you create more usable, more profit-generating space within your existing facility.

This is not to say you will cram a room; when ample space is part of a room's design, it is not idle. With operable walls, a room that is oversized or underused can be divided into multi-purpose rooms for everyday use without giving up the flexibility of a big room. Confine the space. Expand the possibilities.

Walls in Motion operable walls are available in a wide range of acoustic construction. Whatever your sound specs -- maximum absorption for meeting rooms, acoustic fidelity for performance halls -- our walls will help make it happen.



When you need to divide space more flexibly and efficiently, Walls in Motion has the answer. From majestic convention centers to intimate home theaters, our complete line of operable walls, relocatable walls and portable panel systems are the finest flexible division products in the market today.

### **EASY TO USE SO YOU SAVE TIME & MONEY.**

Being able to quickly open and close off a space increases productivity. How many times have you had to delay a meeting to wait for the maintenance or service crew to move a partition? That's why the QUIKWALL Operable wall can be easily adjusted by anyone whether you're in comfy overalls or a fresh-pressed business suit and heels. It takes an expert to build a wall that any non-expert can use.

### **DEPENDABLE PERFORMANCE. NO SURPRISE MAINTENANCE COST.**

Our planners will work with you to suggest a number of alternatives to fit both your resources and your deadlines. Once the layout is approved, our factory-trained installers ensure your operable walls go up right the first time. Afterwards, superior product quality, professional service and yearly maintenance checks will keep your QUIKWALL operable wall working for years.

### **EXPERTISE FOR YOUR PEACE OF MIND.**

We remember that every installation is unique, demanding individual attention to design, product and service. Count on our team of Distributors, Application Specialists, Design and Engineering professionals, Technical Support personnel and Product Managers to develop the ideal wall system for your needs.



# QUIKWALL OPERABLE WALL STRUCTURE.



## ROLLER (TROLLEY) SYSTEM

- D-89 Dual Polymer Trolley
- A-89 4-Wheel Trolley
- A-89 Sliding Polymer Puck

## JACK SYSTEM

- Mechanism extending spring loaded seals against the floor and aluminum ceiling track.
- Constant pressure applied will help prevent panels from moving on the floor

## CRANK HANDLE

- Turns freely without slippage
- Spindle action with NO kick-back

## FACE BOARDS

- MDF
- Gypsum Boards
- Can be fitted with acoustic materials to meet stringent sound requirements

## RETRACTABLE BOTTOM SEAL

- w/Inter-Locking Corner Seal

## ALUMINUM CEILING TRACK

- Long-life
- Rust proof
- Quieter movement of panels

## RETRACTABLE TOP SEAL

- w/Inter-Locking Corner Seal

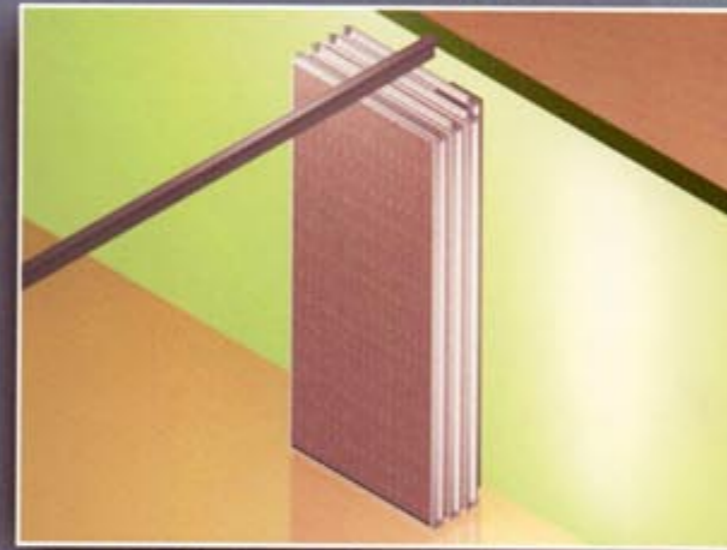
## CONCAVE/CONVEX VERTICAL FRAMES

- Will not warp or deform due to aluminum and steel profiles for a quality panel system.
- Additional pvc seals integrated in the concave section for added acoustic benefits

## INSULATION

- 50 kg/m<sup>3</sup> mineral wool

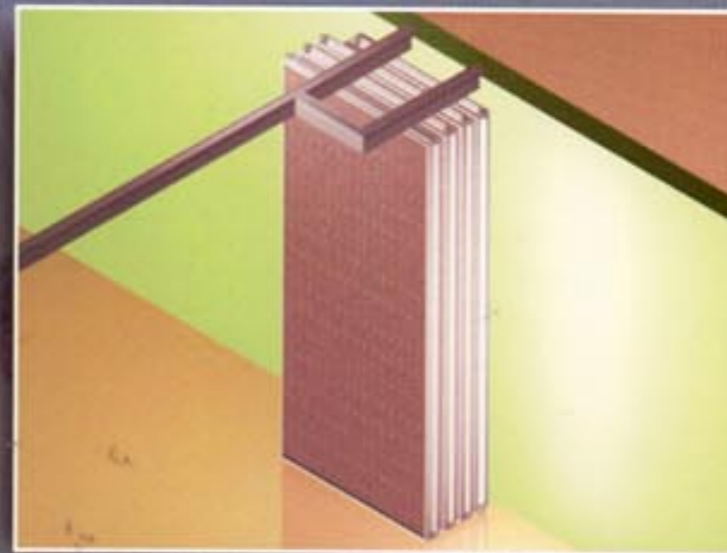
# STACKING (PARKING) THE PANEL



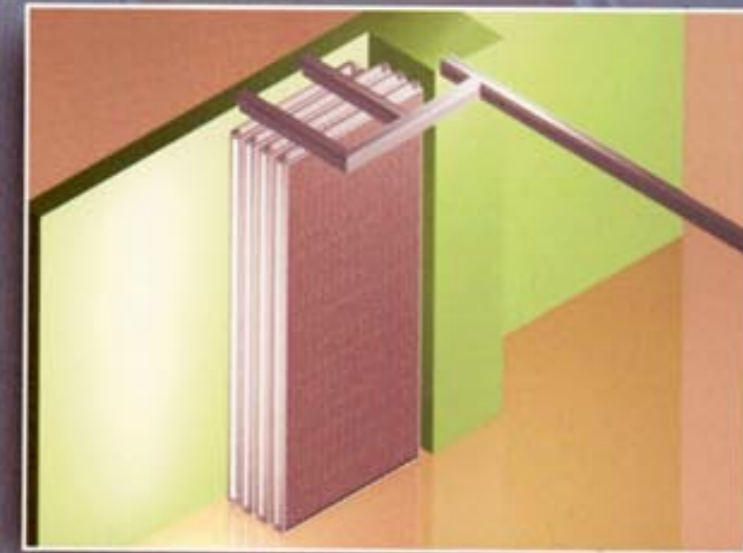
PARKING LAYOUT 1

Panels are moved individually and only a single 4-wheel trolley is used when parking panels in a center position (Parking Layout 1) with a maximum height of 3.5 meters. Panels above 3.5 meters and all other parking options require two dual-polymer trolleys to maneuver panels around walls, columns or to out-of-site areas.

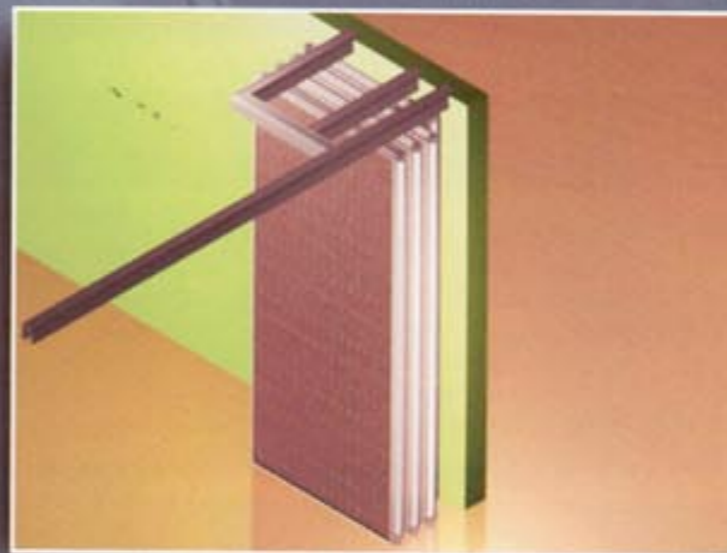
Whether the Panels are simply parked against the wall or hidden in an enclosure, Walls in Motion offers the utmost flexibility when deciding on how and where the panels will be parked.



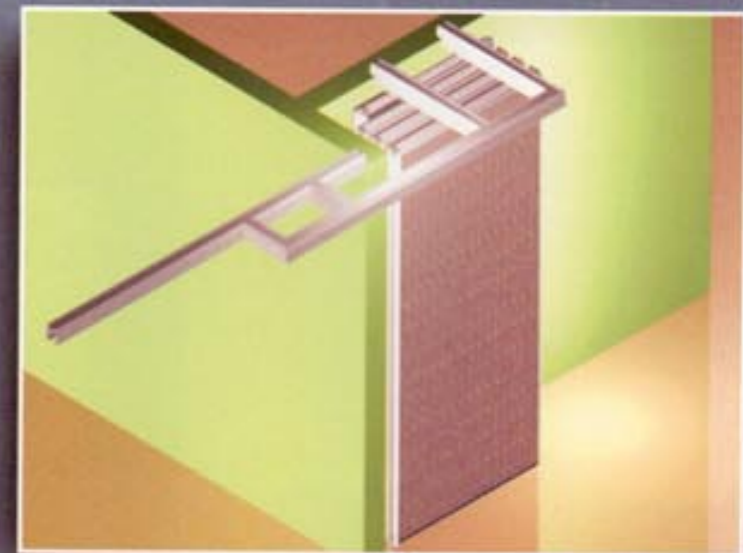
PARKING LAYOUT 2



PARKING LAYOUT 4



PARKING LAYOUT 3



PARKING LAYOUT 5

# PERFORMANCE SPECIFICATION FOR QUIKWALL OPERABLE WALL SYSTEM

## General Description

Operable Wall consisting of 62mm, 89mm or 102mm thick individually-movable panels, suspended from an aluminum top track only, each panel to have top and bottom operable pressure seals and concave/convex interlocking profiles with additional pvc seals. Each panel is suspended on one 4-wheel ball bearing trolley or two multi-directional polymer trolleys. Vertical edges are protected by means of an overlapping aluminium trim.

## Construction

Panels are constructed of a non-deflecting steel tubular frame and aluminium profiles, bolted together. The frame is clad on either side with 6mm, 12.5mm, 16mm MDF, 12.5mm Gypsum Board or any alternative substrate for acoustical or design requirements. The board is typically not fixed to the frame, and is allowed to vibrate independently. The panel cavity is filled with high density mineral wool in accordance with the specified sound insulation requirements.

## Panel Suspension

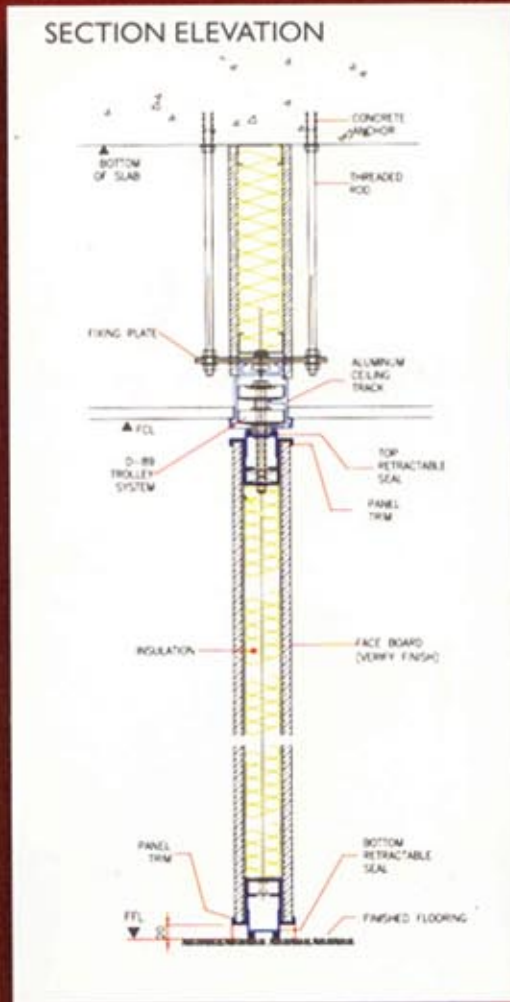
Each panel is suspended on one 4-wheel ball bearing trolley, two multi-directional polymer trolleys or two sliding polymer pucks. The individual panel is adjustable in height without requiring the opening of the ceiling.

## Track System

The aluminum ceiling track is fixed to an adjustable, corrosion-protected steel suspension system.

## Sound (Barrier) Baffle

A sound barrier must be constructed above the operable wall to achieve the same or greater sound insulation value as the operable wall itself. A proper and clean seal against the ceiling track and adjacent building slab or roof needs to be achieved.



## Panel to Panel Connection

Panels are inter-connected by means of a positive locking concave/convex aluminium profile. Two additional vertical gaskets/seals are installed in each concave profile.

## Pass Door Panels

The WINM-62, 89 & 102 Operable Wall can be supplied with a standard 45mm thick pass-thru door. Door frame consisting of QUIKWALL Aluminum SL-02 Door Jamb and an automatically operated retractable floor bottom seal. Top and bottom contact sweep seals in black or grey on panel.

## Retractable Seals

Each panel has a spring loaded top and bottom retractable seals. Seals are to be operated simultaneously by an easy action, maintenance-free detachable 'crank' handle and engaged by a winding mechanism to ensure optimum contact pressure. The retractable seal frame must be constructed of aluminium with flexible pvc seals at the contact points. Corner seals must be fully inter-locking.

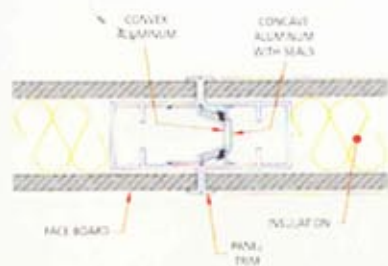
## Expandable (Last) Panel

The Expandable Panel must open and close 100mm and is operated by a single mechanism for both the top and bottom seals and the travel of the Expandable sleeve. The Expandable panel must maintain all the same quality criteria as the other panels.

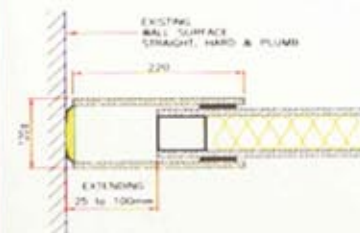
## Acoustic Rating

In accordance with ASTM E90 Laboratory Measurements of Airborne Sound Transmission Loss of Building Partitions, ASTM E 557 Standard Recommended Practice for ARCHITECTURAL APPLICATION AND INSTALLATION OF OPERABLE PARTITIONS.

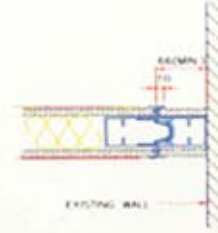
## PANEL TO PANEL CONNECTION



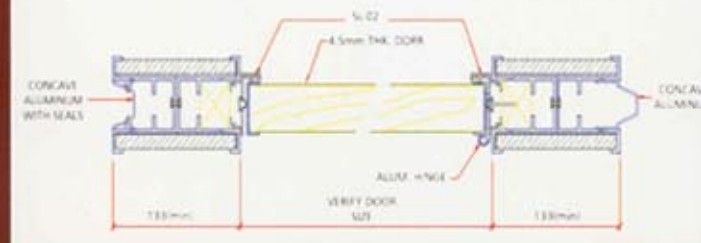
## EXPANDABLE PANEL DETAIL 'LAST PANEL'



## ABUTMENT POST DETAIL 'FIRST PANEL'



## TYPICAL INSET PASS-DOOR PLAN SECTION DETAIL



# SIMPLE AS...



1



2



3



# UNLIMITED CHOICE OF FINISH

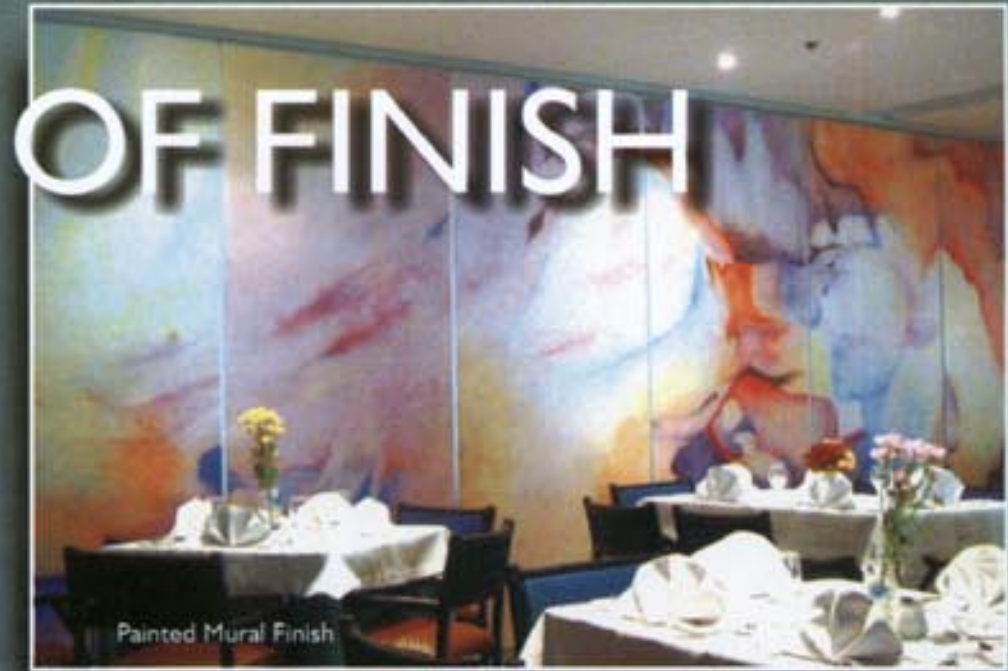
- |             |                |                        |
|-------------|----------------|------------------------|
| Paint       | Wallpaper      | Fabric                 |
| Melamine    | Natural Veneer | High Pressure Laminate |
| White Board | Chalk Board    | Tack Board             |

## WALL ACCESSORIES

- |                    |                  |               |
|--------------------|------------------|---------------|
| Chair Rail Trim    | Baseboard        | Inset Windows |
| Acoustic Treatment | Inset Pass-Doors | Wood Molding  |



Panels with 100 mm Wood Baseboard



Painted Mural Finish



Natural Wood Veneer with Padded Fabric



White Board Finish



Wood Grain Melamine Finish



Powder Coat Frame with Fabric Finish

The finish of the operable walls will play a significant part of the effective overall presentation of the room they're in.

Walls in Motion further can enhance the appearance with a superior quality surface finish. A wide array of materials and application expertise can be assembled to create stunning visual effects. Materials to choose from include wood veneers, laminates and metallic finishes, padded fabric coverings and stainless steel inserts; acoustics, perforated steel sheets and glass surfaces; mirrors and textile coverings, an endless choice of wall surface finishes.

### Multiple use options

Functional work surfaces on the operable wall panels allow the wall to also be used as a white board (marker board), tackable surface or a sound-absorbing surface.



White Board Surface with Aluminum Trim



Wallpaper finish



Inset Pass-Door with matching fabric finish

# THE SIGNIFICANCE OF SOUND CONTROL AND OPERABLE WALLS

This is not intended as an instructional course in acoustics (a complicated subject best handled by professionals). But we hope this overview of sound control will help you appreciate one unique aspect of operable walls: being sometimes open and sometimes closed.

**Sound**, as recognized by the human ear, is comprised of two physical components - loudness and pitch. What we normally call "volume" or "loudness" is actually sound waves traveling through the air, in the form of very small changes in atmospheric pressure. Changing frequencies create longer and shorter sound waves, which are heard as "pitch", ranging from low to high. When sound waves strike a partition (a wall, ceiling, floor, etc.) some are reflected from the surface, (bounce back or echo), some are absorbed by the partition; and some get through (transmitted) to the other side.

An important function of a Walls in Motion operable wall is the control of sound from one side of the room to the other. This is achieved by addressing surface absorption and the flanking paths (see Table 1), relative to total room surroundings. We will help you evaluate the intended use of your space and the acoustical considerations involved. Sound transmission class (STC) (for example: 42, 48, 51 STC) help you compare one panel construction to another under ideal conditions. Our trained staff will guide you through the differences between STC (sound that is transmitted through the wall) and NRC (sound that is absorbed by the wall) relative to your requirements.

Though similar in function, operable walls do not have the same uniform specifications and general nature, as do fixed partitions, which would make it possible to compare against a standard chart. Further, construction materials, methods of suspension and operation vary with each manufacturer.

Since operable walls separate the functions of people when used as

10 dB  
Human Breathing



40 dB  
Average Home



60 dB  
Conversation (3feet)



80 dB  
Noisy Restaurant



110-120 dB  
Rock Band



30 dB  
Soft Whisper



50 dB  
Average Office



70 dB  
Average Street Noise



80-90 dB  
Average Factory

partitions (their closed mode), a uniform means of measuring the sound controlling performance (fixed or movable) is known as "Sound Transmission Class" (STC). The higher the STC, the better the performance. STC is a double-digit rating (38, 42, 48, etc) of a construction's sound transmission performance, at a range of frequencies from 125 hz to 4000 hz.

STC is the accepted standard for rating the acoustical performance of operable walls conducted in a laboratory environment.

### FINDING 'STC'

Sound Transmission Class is a given number describing the lab performance of, in this case, the operable wall in stopping the transmission of sound from one room to the other. It is derived from the individual

Sound Transmission Loss (STL) figures of 16 different frequencies (see Table 2).

**IMPORTANT THINGS TO KNOW:** Expect the installed operable wall to perform 5 to 12 STC points lower than those tested under the ideal conditions of a lab test.

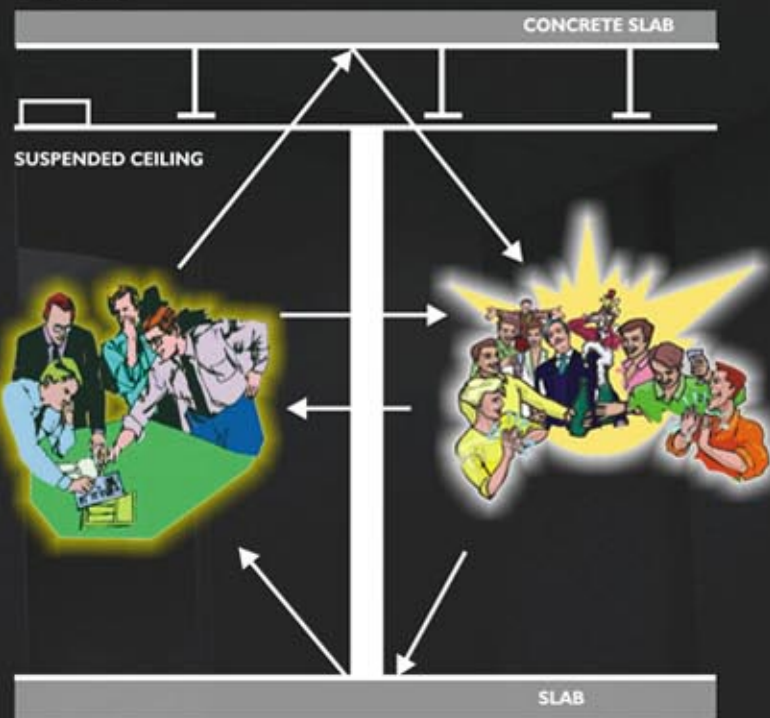
### WHY THE BIG DIFFERENCE BETWEEN THE LABORATORY TEST AND FIELD TEST RATINGS?

This is because site conditions are simply not as well built as laboratories. The floors are not as level, the walls are not as plumb, etc. In a laboratory, the testing area will fit perfectly because the lab is built for that purpose, isolating only the testing materials.

**NIC (Noise Isolation Class)** - is a number rating like STC expressing actual sound control between two adjoining areas. The only difference between NIC and STC rating is that the NIC is performed on-site, and is thus commonly referred to as the "field test." This test represents the performance of the entire construction of the tested room, not only the operable wall. That is, besides the operable wall - the carpeting, the ceiling, office furniture, basically all items in the room affect the NIC result.

In the NIC Test Result (Table 2), the first column on the left shows the standard 16 frequencies used for the test (125Hz-4000 Hz). The second column refers to the Source Room, noting Sound Pressure Level (SPL) generated. The third column from the left shows the amount of sound that has transmitted to the Receiving Room; the far right column shows total Sound Transmission Loss (STL), actual sound loss per frequency. Once the test is completed, the NIC rating given is the average loss of all 16 frequencies, not the highest STL rating for any one of the frequencies. In this table, the average NIC Rating is 33.5. Based on industry standards, a wall with a 33.5 NIC could have an estimated STC rating of 38 to 46, depending on flanking paths.

Table 1



**FLANKING PATH** - Leaks in the surrounding construction. Sound, like water, follows the path of least resistance. Inferior construction, poor materials or careless installation can all contribute to leaks. Direct HVAC ductwork between rooms, common lobbies and corridors, and open plenums above suspended ceilings are all perfect ways for sound to escape. Acoustic ceiling tiles help prevent reverberation, while allowing sound to pass through easily. Uneven floors and out-of-plumb walls also contribute to leaks, as do recessed lighting and access panels. Above all, the best defense against flanking paths is careful planning in the beginning stage of the project.

Table 2

| Noise Isolation Class- Test Results |          |           |          |
|-------------------------------------|----------|-----------|----------|
| Octave Band                         | Source   | Receiving | STL      |
| Frequency (Hz)                      | SPL (dB) | SPL (dB)  | SPL (dB) |
| 125                                 | 75.9     | 54.0      | 21.9     |
| 160                                 | 83.9     | 59.6      | 24.3     |
| 200                                 | 79.9     | 53.7      | 26.2     |
| 250                                 | 78.7     | 52.7      | 26.0     |
| 315                                 | 82.6     | 55.0      | 27.6     |
| 400                                 | 84.1     | 52.9      | 31.2     |
| 500                                 | 81.5     | 49.5      | 32.0     |
| 630                                 | 82.1     | 50.0      | 32.1     |
| 800                                 | 81.6     | 44.4      | 37.2     |
| 1000                                | 82.1     | 42.9      | 39.2     |
| 1250                                | 83.7     | 47.0      | 36.7     |
| 1600                                | 83.6     | 47.3      | 36.3     |
| 2000                                | 83.8     | 44.2      | 39.6     |
| 2500                                | 80.7     | 39.0      | 41.7     |
| 3150                                | 76.1     | 37.4      | 38.7     |
| 4000                                | 76.4     | 31.5      | 44.9     |
| NIC Rating:                         |          |           | 33.5     |

## CONTROLLING SOUND

To control the loudness and duration of sound, there are two factors to manage: sound transmission and sound absorption.

There are two ways to do this:

1. Prevent sound transmission through a wall – this is known as “Sound Transmission Class” (STC).

| STC | CONSTRUCTION MATERIALS                    |
|-----|---|
| 22  | Solid wood door                           |
| 26  | 1/4" clear glass                          |
| 28  | Hollow core steel door                    |
| 32  | 1/2" clear glass                          |
| 36  | 1/2" gypsum on steel studs, not insulated |
| 38  | 4" painted concrete block wall            |
| 43  | 6" hollow concrete block, painted         |
| 45  | 1/2" gypsum on steel studs, insulated     |
| 53  | 12" poured solid concrete wall            |

2. Keep sound from bouncing back (reflecting or echoing) in the same room in which it is generated. This can be controlled through the absorption characteristics of the material of and on the walls and ceiling. All sound-absorbing material is assigned a “Noise Reduction Coefficient” (NRC) number. NRC describes the effectiveness within the same room only. Typically, an acoustically transparent fabric is used to cover insulation, allowing sound to transmit through the fabric and be absorbed by the insulation.

Standard Insulation used to absorb sound:

| NRC  | MATERIAL DESCRIPTION                                 |
|------|--|
| .70  | 25mm thick FIBERGLASS – 48 kg/m <sup>3</sup> density |
| .71  | 25mm thick ROCKWOOL – 60 kg/m <sup>3</sup> density   |
| .70  | 25mm thick POLYESTER – 35 kg/m <sup>3</sup> density  |
| .90  | 50mm thick FIBERGLASS – 48 kg/m <sup>3</sup> density |
| .94  | 50mm thick ROCKWOOL – 40 kg/m <sup>3</sup> density   |
| 1.04 | 50mm thick ROCKWOOL – 60 kg/m <sup>3</sup> density   |
| .90  | 50mm thick POLYESTER – 35 kg/m <sup>3</sup> density  |

Source: CSR BRADFORD-AUTEX INSULATION

### Glossary of Acoustical Terms

**ABSORPTION** – The reduction of reverberating (echoing) sound by the use of porous materials. All materials absorb some amount of sound and the rest is reflected.

**AMBIENT NOISE** – The ongoing regular noise of a given area, for example, the constant hum of a computer or the HVAC system. Also known as background noise.



**ASTM** (American Society for Testing and Materials) – Organization that establishes standards for testing products or systems in many types of applications, including acoustics.

**DECIBEL (dB)** – a unit of measuring relative loudness. One decibel (1 dB) would be the faintest sound, where 120 decibels (120 dB) being the average threshold of pain.

**FREQUENCY** – The number of times per second that a sound wave repeats its cycle, or Hertz (Hz). A low frequency (large sound wave) of 125 Hertz has a wavelength of 2.75m. Where a higher frequency (small wave) of 8000 Hertz has a wavelength of about 45mm. Lower frequency sounds are more difficult to control because of their longer wavelength. When loud music is played, the high frequencies are normally blocked, and you only hear the thumping of the bass (low frequencies).

**HERTZ (Hz)** – Unit of frequency. One Hertz (1 Hz) equals one cycle per second.

**NRC (Noise Reduction Coefficient)** – a single digit rating of the sound-absorptive efficiency of a given material. For example,



1/2" gypsum board has a NRC Rating of 0.5, and 2" thick rockwool @ 40kg/m<sup>3</sup> has a NRC Rating of .94. An NRC rating of .94 means the material will absorb 94% of the sound frequencies tested. The manufacturer should supply a test result noting those frequencies tested.

**RECEIVING ROOM** – Room opposite the room with the sound source.

**REVERBERATION** – is the prolongation of a sound in the room. This is caused by multiple reflections (echo or bouncing back) of sound, even after the sound source has stopped emitting sound.

**SOURCE ROOM** – The room that contains the sound being generated



### Getting the Sound Control You Need Checklist

1. Determine the use of the surrounding areas and the ambient noise of each. It's important to know that there is no such thing as 'sound proof.' There will always be background noise. The constant hum of a computer or the HVAC system can actually make the room seem quieter by masking the noise from other areas you are trying to keep out. The intended use of the room versus the use of the surrounding areas will determine the amount of sound control you need.

2. When sound control is important to your room, or when existing construction is in question, hire an independent acoustic consultant it's worth it.

3. Take the necessary steps in design and construction to avoid flanking paths.

4. If flanking paths are unavoidable, specify a realistic STC for the operable wall, keeping it in balance with the surrounding construction.

5. Specify the STC required, realizing that your actual installed STC will be 5 to 12 points lower.

6. Select the appropriate type of operable wall, keeping in mind the application,

construction quality, ease of operation and warranty period.

7. Make sure that those operating the operable wall have been fully trained to move, adjust and park the walls properly.

8. Operable wall panels should have top and bottom retractable seals. This ensures easy movement around tracks, and most importantly, provides a pressure-positive acoustical seal at the floor and ceiling.

9. What type of finish will be used in the room? The materials used will either absorb or reflect the sound, ideally a little of both. The walls (including operable walls), floors, ceiling and doors should be able to block the sound from passing through and around it. Soft surface treatments like carpet, drapes, wall hangings and padded walls will reduce some unwanted reverberation or echoing.

10. Keep in mind the size of the room. Sound is also affected by space or distance; in a larger room the sound source could be farther away from the wall, diminishing the level of sound before it gets to the wall. Where a smaller room with little or no acoustic treatment will do just the opposite.

### Service

Our Product Managers will assist in layout development, product selection and project coordination from start-up to project completion.

### Durability

With Walls in Motion's superior panel construction, you can count on products to last for years. A combination of steel and aluminum framing ensure that our panels exceed even the most demanding applications.

### Attention to Detail

Effective space, sound and sight management allows environments to function at peak performance. Walls in Motion offers a complete product line designed to work simply and easily, in all applications.

### Delivery

Fastest and the most reliable production schedules.

### Buyer Protection

We stand by our work. We provide extended service and warranty, along with a yearly maintenance program to ensure continued product performance and value.

### Versatility

Functional work surfaces on the operable wall panels allow the wall to also be used as a white board, tackable surface, a sound-absorbing surface or other design or useful alternative.