

GenieClip™

Technical Note #1:

Resilient Channels: A Proven Liability

Walls and floor-ceiling assemblies with higher STC values have been achieved for years using a variety of construction techniques. Today, many high-quality multi-family projects target STC-60. Building code (either IBC or UBC) are now minimum STC-50 for sale construction and for rentals that might be converted to for sale. Even though most resilient channel assemblies are not able to meet such requirements, they still show up in projects, usually due to a lack of understanding about newer, more reliable technologies.

Resilient Channel is Easily Short Circuited

When installed correctly in pristine lab settings, resilient channel improves STC ratings by about 5-7 points or more, depending on construction. However, resilient channel is easily short circuited, so very careful handling and construction techniques must be followed. Often it is difficult to achieve this in a "production" environment in the field. A recent study showed that STC can be decreased by 10dB if 35% of the resilient channel is short circuited. Even

at 10% short-circuited channel, the STC of the assembly will fail the building code requirement.

Noise is the #1 Litigation Issue in Multi-Family Construction

Recent investigations (often due to litigation) has shown that resilient channel construction has a post-construction failure rate (STC designed value) of 90%. Given nationwide litigation history and concerns regarding party walls and floor/ceiling assemblies, especially in multi-family, one must be careful using this technique, if one were to still use it at all. Acoustical consultants are frequently called in to provide expert testimony in issues that result in mediation, arbitration and litigation. The failure rates and causes of failure have been accumulated over a growing body of such field investigations using field STC measurements. Often, the acoustical engineer has to invade the wall to find the culprit. Litigation on noise issues is becoming more frequent, and the cost of litigation and settlements have risen sharply.

90% Failure Rates = High Contingencies

With the established 90% field failure rates of resilient channel, many large developers set aside up to \$30,000 per

unit for future litigation and warranty repair costs. While using resilient channels is appealing only from a construction cost perspective (ignoring litigation risk), developers, architects, and builders must be fully aware of the difficult construction requirements, as well as the post-construction failure rate and litigation risk before still considering using them.

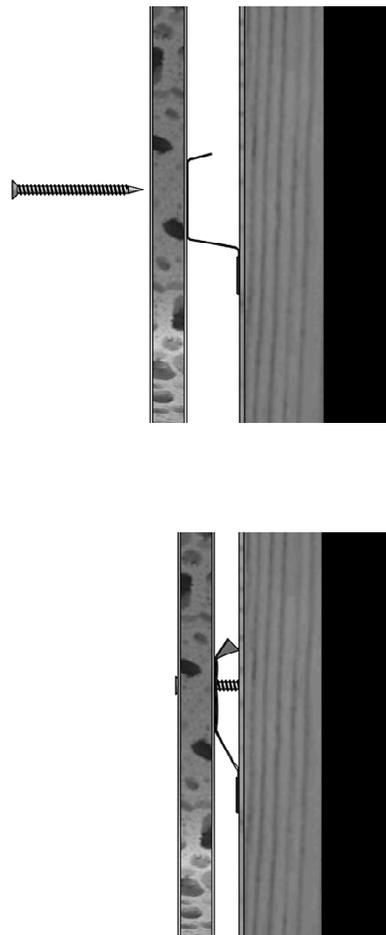
California State Senate Bill SB 800
In addition to nationwide litigation, California enacted a law that gives even more specific rights to condo and townhome buyers. SB 800 was signed into California law on September 20, 2002. It applies to new construction intended to be sold as individual dwelling units, whether as single-family homes or attached units. It was sought by plaintiffs' attorneys in response to a court decision, which precluded recovery in tort for construction defects that had not yet caused property damage or physical injury. SB 800 establishes a one-year warranty specifically for noise transmission from adjacent units in attached structures (runs from date of original occupancy of the adjacent unit). This law is creating a further flood of litigation in California, and other states are now in process of enacting similar laws.

Caveat Emptor

For those still considering using resilient channel construction, the following page contains a comprehensive list of issues

that one must be aware of before a project begins. Source: these problems were compiled from numerous conversations with acoustical engineers, construction litigation attorneys, construction insurance agencies, architects, GCs and drywall subcontractors.

Diagram 1:



Summary:

Resilient channels pose a significant risk of failure in floor/ceiling and party wall assemblies. Lab specifications showing STC 43-55 often result in field-tested STCs in the 34-38 range. Failures trigger litigation and warranty claims and damage the project brand, reputation, word of mouth and resale values.

1. The original RC-1 used in most lab tests no longer exists. USG stopped making the product in 1985. Most test results are based on STC tests conducted 10 or more years ago on different fabrications. As there is no standard for RC channel fabrication, the various resilient channels available vary greatly in their resilient (stiffness) characteristics. Using currently available RC channels that are often too stiff or that have holes the wrong size or shape results in reduced STC values. There are few current RC channels available that have recent test results based on their actual fabrication and design.

2. Dead on arrival. RC channels are thin and prone to damage from shipping or on-the-job storage. Any bend in the channel can cause shorting. We have multiple reports of damaged RC channels that are deployed because by the time the damage is perceived, it is too late to re-order.

3. The RC channels are placed too close together. If this happens, the

composite stiffness of the wall will be too high and will result in reduced sound insulation.

4. The RC channel is often drawn and/or installed upside down. In such instances, the weight of the drywall pushes the channel into the studs (instead of pulling it way from the studs when installed properly) thus causing a short circuit in the wall, resulting in poor sound insulation.

5. The RC channel extends too far and touches an adjoining wall. This error causes a short circuit in the wall resulting in radically degraded sound insulation.

6. A screw is placed incorrectly. While the drywall is being attached to the resilient channel, a screw that accidentally attaches into a stud or touches a stud at any point will short circuit the wall and result in poor sound insulation. (see diagram 1)

7. Drywall is not installed properly. If the subcontractor adds drywall that is beyond spec (e.g. adding a layer of Type X to meet fire code), the resulting structure can sag, and the weight of the drywall on the resilient channel can cause the wall to touch the floor, causing a short circuit in the wall, resulting in poor sound insulation.

9. Electrical junction boxes attached to the stud and to the wall. This common

error causes a short circuit in the wall and result in poor sound insulation. This mistake is easy to make with the faceplate, which must also be isolated, or by not cutting enough of the drywall away around the junction box.

The same principle applies to ceiling attachments such as lighting and fans.

10. Gaps around the junctions. If junction boxes at the wall are sealed with standard caulk that hardens over time (instead of non-drying non-skinning acoustical sealant), or not sealed with anything, this will cause a short circuit (or air gap) in the wall, resulting in poor sound insulation.

12. Actions of other subcontractors. When RC channels are used in floor/ceiling assemblies involving stuffing materials into the open truss, the risk is magnified. Plumbing, HVAC and electrical materials are routinely attached inside the small cavities in ways that guarantee short-circuiting the RC channel.

13. Green wood warping. Most multifamily housing (such as west of the Mississippi River) is made of the less expensive green wood, which dries after installation. The drying process can distort the framing by as much as 1/2" in extreme situations; 1/4" is common. This torque can bring the RC channel in contact with other elements and cause a short circuit.

14. Moisture & humidity warping. In high-humidity areas (such as the Eastern seaboard), humidity can bow and buckle drywall, 1/4" to 1/2" in many cases. This distortion can bring the RC channel in contact with other elements and cause a short circuit.

15. Inspections. In several states, RC channels have developed such a contentious reputation that a special inspection must be completed before the wall or ceiling can be closed up. Scheduling a special inspection can take several days.