

Soundproofing a Deck

Q I am putting a ground-level deck on a client's home that's located next to a busy road. Besides plantings, what is the best strategy for reducing the road noise on the deck?

A Dr. Bonnie Schnitta, president of Sound Sense, a company that specializes in acoustic engineering and consulting, responds: It takes roughly 200 feet of dense foliage to equal the sound reduction of an acoustic barrier that can be as thin as 1/8 inch. Plants don't stop sound, but they can diffuse it and prevent a fence from being a reflective surface—particularly important on the client's side of the fence, because any noise that goes over the fence will hit the house, bounce back, and then reflect off the fence, amplifying the sound. So while plants themselves aren't great at reducing noise, they can help make your solution work.

The barrier you build to reduce noise needs to have the right transmission loss

in the frequencies (such as car exhaust noise) that are disturbing. For an outdoor wall or fence, I recommend a minimum sound transmission class (STC) of 30. (STC is the rating of an object's ability to block sound.) The next goal is to make certain that the barrier provides a level of reduction that is perceivable to the client.

A barrier or fence that's intended to reduce outdoor noise should be placed as close to the noise source (the road) or to the receiver (the client on the deck) as possible. Placing the fence close to the road is preferable, but setback requirements might reduce its effectiveness. Having a barrier in both locations would provide even greater noise reduction, whereas a fence placed halfway between the deck

and the road would be far less effective, if at all.

Taller fences provide greater noise reduction, but zoning requirements or visibility issues may restrict the height of a roadside barrier, making it less effective. To provide perceivable noise reduction, an acoustic fence next to the road would need to be at least 8 feet tall.

A wooden fence doesn't have sufficient STC by itself, so it should be lined with an acoustic barrier having an STC of at least 30. Typically, we use UV-resistant mass-loaded vinyl, which works by providing a dense, resilient layer as well as a surface free of voids to block the sound. This approach lets the client and contractor choose a fence style they like and then line the fence with the vinyl barrier (usually black). In order to have sufficient transmission loss in the lower frequency of car exhaust, use a mass-loaded vinyl with a weight of 1 1/2 pounds per square foot or greater.

If an 8-foot fence isn't a possibility, then I'd locate the barrier beside or on the deck. One solution we've used is a lattice planter with a clear acoustic material attached. The vines that grow in the planter and on the lattice prevent the barrier from being too reflective, while the transparent material allows dappled light through.

Finally, when a client voices concerns about noise in a finished product, we recommend that the contractor hire an acoustic engineer to review the situation and recommend a solution. An expert's opinion can be a reality check and adjust clients' expectations for whatever solution they decide to pursue.

This is a revised version of a "Q&A" that originally appeared in JLC.



Making PVC Columns

Q I plan to wrap some 8-foot-tall porch columns using 1x5 and 1x6 PVC stock, with a small PVC bead applied to the outside corners of the 1x6s. All of the joints will be 90-degree butt joints, and I'm wondering if the column wraps can be just glued together or if the joints should also be reinforced with nails or biscuits. And what kind of glue should I use?

A John Pace, president and CEO of Versatex Building Products, a major manufacturer of cellular PVC trim, responds: Although it's not necessary to join the boards together with biscuits, a few 6d stainless steel finish nails or some clamps would be helpful for applying the needed pressure at the glue line to produce strong, bonded joints. If you do choose to use biscuits, make sure that you use ones that are compatible with PVC.

The most important step in the installation process is to use the right adhesive. Sealant-type adhesives are thick and viscous and can be slow to cure. For example, you wouldn't want to use a polyurethane adhesive, since they are thick and require moisture to accelerate the curing process.

It's better to use solvent-based adhesives, such as those typically used for bonding PVC plumbing pipe. The cure time is typically shorter, at three to seven minutes, depending on whether it's a thin or medium-bodied adhesive. Adhesives such as Christy's Red Hot Blue Glue (tchristy.com) or Extreme Adhesives PVC White Hot (www.royaladhesives.com) are good choices for your particular application. Our company has been fabricating one-piece PVC corners for more than 13 years using Weld-On 705 PVC pipe adhesive (weldon.com) without any issues.

When using these adhesives, apply the glue to only one of the edges that you plan to bond, not both. This will give you the best board-to-board bond. Finally, be sure to allow ample room between the structural post and the PVC wrap for any twisting of the post, especially if the post is wet when wrapped. Otherwise, there is a possibility that one or more of the joints will split apart as the post dries out. To avoid this, take steps to dry out posts before wrapping them with PVC. ❖