



The Whys and Wherefores of Freeway Soundwalls

Love 'em or hate 'em, soundwalls have become a very familiar sight on our freeways. More spring up every day. We know why they're there, but why are they at some locations and not others? Why are some short and some tall? And are some types better than others? With this article, we'll try to answer these questions for you.

Why Did He Get a Wall Before Me?

In Section 215.5 of the Streets and Highways Code, the California Legislature mandated that the Department of Transportation (Caltrans) develop and implement a system of priorities for ranking the need for soundwalls along freeways and expressways. Caltrans must give highest priority to residential areas developed prior to a freeway's opening. Other criteria for establishing priority include: existing and future noise levels, traffic flow increases, cost vs. noise reduction expected, the number of people living next to the freeway, and whether a majority of these people lived there prior to the freeway's opening.

The priority list is revised annually and, consistent with available funding, a program for constructing soundwalls in priority order is included in Caltrans' proposed state transportation improvement program (STIP). Local cities, counties and public agencies can override this list by building the soundwalls themselves and waiting to be reimbursed by the State when their priority comes up. A city or county willing to pay for at least 33% of the cost will be "accelerated" to the top of the priority list.

Why Didn't I Get a Wall?

The Federal Highway Administration's (FHWA's) design guideline states that the average noise level during the noisiest one-hour period of the day should not exceed 67 dB(A) at a residence, park, school or other noise-sensitive area adjacent to an existing or proposed freeway. If the existing or future noise level approaches or exceeds this value, then noise control (usually sound walls) must be considered.

Caltrans expands on the FHWA's guidelines with the following additional criteria: a soundwall must provide at least 5 dB of noise reduction to be considered "feasible"; a soundwall must block the line-of-sight between an 11½'-high truck exhaust stack and a nearby 5'-high receiver; a soundwall must be "reasonable" (usually defined as costing \$35,000 or less per benefited receiver); and wall heights in excess of 16' are typically not considered. If the soundwall is within 15' of the travel way, the height cannot exceed 14'.

In most cases, homes adjacent to a freeway qualify for a soundwall. However, there are cases where soundwalls are not constructed. For example, consider a row of homes adjacent to a freeway where the noise level exceeds 67 dB(A). Soundwalls must be considered. However, if the soundwalls will not provide at least 5 dB of noise reduction even at their maximum height of 16', or if the necessary soundwalls cost more than about \$35,000 per residence, they probably will not be built.

Why is His Wall Taller?

The actual height needed for any soundwall depends on many factors, including: the relative geometry of the freeway, soundwall and homes; the amount of noise reduction needed; and the truck stack line-of-sight consideration. Typically, the highest soundwall height that can be reasonably justified will be built.

Is His Wall Better Than Mine?

Walls can be made of many different materials – from glass and wood to metal and concrete block. However, any material that weighs at least 4 lbs/ft² is usually adequate, since more noise is going over the wall than through it. Aesthetics aside, which material is used does not matter, acoustically speaking.

Two exceptions are earthen berms and sound-absorptive walls. Both can provide up to 3 dB more noise reduction than a normal soundwall of the same height.

While this article provides only a generalized look at soundwall analysis and the decision-making process, if you have more specific questions, we'll be glad to help.

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