



## ***Big Box Developments***

Wieland Acoustics has had the good fortune to work with Applied Planning, Inc. on three “big box” commercial developments in the high desert area around Victorville, CA. These are typically huge projects of 20+ acres that include a large, well known retailer (the “big box”), along with several other buildings that may house other, smaller retail outfits, as well as restaurants, fast food eateries, gas stations, and the like.

What makes these projects interesting from an acoustical standpoint is the wide variety of noise sources that have to be considered. These can include increased traffic on the arterial system, trucks entering and leaving the site at all hours of the day and night, loading dock activities, fork lift movements, large mechanical equipment items such as compactors and air handlers, fast food menu boards, and parking lot activities such as car doors being closed, engines idling, shopping carts on rough pavement (don’t even get us started on textured pavement!), etc.

How do you model all of these noise sources that are spread out over such a huge area, and that can occur at completely different times of the day or can occur simultaneously? And how do you mitigate all this noise so that it complies with the local municipal code standards, especially the nighttime standards?

Modeling the noise is very complex, and can involve developing three-dimensional acoustical models that are mind boggling. Of course, the model needs data to interpret so we need to visit similar projects. But there’s so much activity going on at these sites that it isn’t as easy as plopping down a sound level meter somewhere and hoping that the data you get is any good. No, the data is pretty useless unless each noise source can be identified and quantified, along with its distance from the meter, how long the activity occurred, and so on. If you can picture an acoustical consultant frantically writing down notes and data as fast as he can before the next source comes along, you have a pretty good idea of how this works. There are other ways to do it, of course, but this method is an efficient way to gather lots of data, and to see how the activities work together to create the noise levels you measure.

Once you have a working model, you can use it to predict the noise levels that will be experienced in the surrounding communities, and what kind of mitigation measures will be needed. Mitigation is often a difficult problem with these projects because the big box stores are typically put in the back corner of the site so that the entries can face major streets, and so that the parking lots are in front of the stores. This leaves most of the major noise sources (truck deliveries, loading docks, etc.) in the back of the stores, which often directly abut a residential neighborhood. And we all know that residential noise standards are the most stringent standards in the municipal code, with nighttime standards being the toughest of all. Since big box stores are usually 24-hour operations, this makes our lives very interesting indeed!

Often the mitigation measures include very high walls around the loading docks and some portion of the property lines. In some cases, the walls need to be sound-absorptive. This is because the big box stores tend to be rather tall and fairly close to the property line walls, which means that noise can bounce between the two surfaces until it spills over the property line wall, thus minimizing its effectiveness.

We enjoy these projects; they're interesting and always offer a new twist. So we look forward to working with Applied Planning, and other planners as well, on many such future projects.

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