

Highway-Compatible Residential Development

A Feasible Ideal

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“If you build it, they will come” is a quotation often applied to highways and residential development. People choose dwellings close to highways to get to work and to return home as easily as possible. Accessibility is considered “essential for successful development” (1).

In the Washington, D.C., area, “people are standing in line” to buy million-dollar-plus homes next to Interstate highways (2). Consequently, new communities line the highways, although office and commercial development is more compatible with traffic noise.

Finding a Balance

Local planning and zoning authorities must accommodate an appropriate balance of land uses, making highways through residential zones unavoidable. Clustering residential construction along these corridors is convenient for commuting and minimizes the cost of providing infrastructure for new development—water and sewer services, as well as local and connecting streets.

Moreover, property owners’ development rights and developers’ clever schemes often are difficult for local authorities to resist. The issue is not whether there will be residential development, but how the design can provide for an acceptable quality of life for residents while still allowing the developer a reasonable profit.

In the United States, most highway noise abatement takes the form of noise barriers constructed by the state, often with the federal government sharing the costs. Developers and local planning and zoning authorities are recognizing the need to mitigate traffic noise for new residential developments.

Some jurisdictions have understood that development adjacent to highways requires special consideration. Others have addressed the matter later—prompted by a state highway department unwilling to build new barriers unless the jurisdiction controlled the development along roadways.

Ideally, restricting development to noise-compatible uses can avoid noise impacts. This cannot always be accomplished—and some land planners perceive the practice as undesirable, creating strip development. As a result, the objective becomes highway-compatible residential development.

Demands on Developers

The goal of a developer is to maximize profit by building the greatest number of housing units allowable for the zoning. The allowable maximum density, however, is usually unattainable because of

- ◆ Geometric restrictions for individual lots and buffer zones for adjacent properties;
- ◆ The need for roads, sidewalks, vehicular parking, recreational space, and other amenities;
- ◆ Drainage, stormwater management, and tree conservation requirements; and
- ◆ Floodplains, wetlands, and steep slopes.



Berm construction is generally preferred by builders.

Developers are not enthusiastic about setting aside developable land to serve as a noise buffer, especially if the buffer does not satisfy other constraints, such as tree conservation. As a result, highway-compatible site design becomes a trade-off between losing lots and accruing costs for noise mitigation.

Although many developers recognize that minimizing noise exposure enhances the value of a housing unit, the benefits are harder to quantify than the costs. The costs can be direct, such as barrier construction, as well as indirect, such as the reduced revenue from lost building lots. The benefit of an increased selling price is difficult to determine, because the proximity of the highway has positive and negative aspects.

Studies of traffic noise and property values show that the selling price of a house in a noisy area is about 0.4 percent less per decibel than the selling price in a quiet neighborhood—a difference of \$32,000 for a \$400,000 house (3). In an active housing market, however, the increase in selling time for houses next to a noisy highway may be negligible. Market forces thus can be insufficient as controls. As a result, the assurance of highway-compatible residential development becomes the responsibility of the local planning and zoning authority, which approves land subdivision and development.

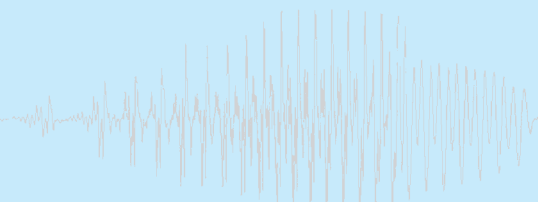
The land development process starts when a developer proposes a plan responsive to the local requirements, and the planning and zoning authority reviews the proposal. Noise evaluation and control should occur within this framework. The local jurisdiction must

- ◆ Establish reasonable design criteria,
- ◆ Define a consistent evaluation process, and
- ◆ Competently review the developer’s submittals.

In response, the developer must

- ◆ Estimate the traffic sound levels at the site,
- ◆ Design noise mitigation features, if necessary, and
- ◆ Document the design analyses for review.

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Where to Mitigate?

If a tree falls in the woods with no one there to hear it, it makes sound, but not noise. Noise is unwanted sound and therefore requires the presence of a person to object. Residential development should focus noise mitigation on areas where people are present.

Controlling noise at the perimeter of a 10-acre lot produces little benefit, but quieting a backyard patio or deck is essential for a single-family residential development. A multifamily development, in contrast, is less likely to make use of the outdoors, and noise may be mitigated appropriately with architectural soundproofing to protect residents indoors. Balconies on highway-exposed façades, however, should be enclosed, and outdoor amenity areas should be sheltered, perhaps by the building structures.

The orientation of a dwelling may ensure a congenial outdoor area. Fronting a dwelling to a noisy roadway can shield the rear patio or deck; a brick-veneer front façade, for example, can provide the most soundproofing benefit.

Locating active recreation areas—ball fields, tennis courts, and golf links—and tree conservation zones between the road right-of-way and dwellings can enhance the compatibility of a residential development with an adjacent highway. Clever use of the topography, suitable regrading, and placement of auxiliary

structures—such as parking facilities—can minimize barrier requirements.

Site constraints and market forces limit these options, however. Noise barriers and structural soundproofing may be necessary if a site is sufficiently exposed. If barriers are indicated, berm construction generally is preferred. Builders are accustomed to moving earth but are loath to construct walls without enclosing a space on four sides with a roof above.

Answering the Challenge

Many communities have achieved highway-compatible residential development. Consistently successful outcomes, however, demand well-written and intelligently implemented regulations. This requires sophistication on the part of local planning and zoning authorities, not only to set reasonable and appropriate goals but also to determine if a developer's plan for noise mitigation is feasible and if the analysis is competent.

References

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3. Nelson, J. P. Highway Noise and Property Values. *Journal of Transport Economics and Policy*, May 1982.

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