

PLANNING AND DESIGN INNOVATIONS OR HOW TO MAKE A FREEWAY A GOOD NEIGHBOR

A. L. Elliott, California Division of Highways

•WE HAVE plenty of problems and very few adequate solutions. It is difficult to build any kind of a highway through a congested city. It is difficult to plan. It is difficult for the contractor. It is difficult for those who must put up with the mess. People fear that the highway will bring noise pollution, fumes, smog, odor pollution, degradation of property values, congestion, and general disruption of a neighborhood. We have heard startling figures as to the amount of paved area there is in the average city that is used just to carry vehicle traffic. The laymen cry that the engineers will not be happy until they have paved the whole country and made it into one vast freeway.

Many of the solutions to these problems are really not solutions at all. They are merely stop-gap expedients to cope with some emergency. In a few years, some of these expedients will actually add to the overall problem. We must also face the fact that there are no perfect solutions. We are stuck with the fact that, no matter what we do, we are going to make a lot of people unhappy.

However, we should not lose sight of one fact—a fact that frequently gets obscured in the fog created by well-meaning crusaders. We highway engineers are not doing this maliciously. We get no sadistic delight in projecting a freeway across a city. We are not seeking ways to cause people unhappiness and trouble. Neither is the automobile an inhuman monster that is destroying us and our civilization. Very few automobiles run about by themselves. They always have a human at the controls, and all of the terrible machinations of this vicious automobile are merely being carried out to serve the whim or convenience of some human. No matter how bad the automobile is, we seem to prefer it to anything else and we tolerate it because it serves a purpose for us. We moan and cry about the trouble and nuisance it is causing. We advocate rapid transit systems to get other people off the road so we will have more room on the highway. The truth is that, with all its faults, the automobile has given man the greatest individual freedom that he has ever had to move about on the face of the earth. He is not going to give that up easily. Our problem as highway engineers, then, is not eliminating highways but making better neighbors of them.

What are we doing? What have we done in specific instances? What really should we be doing to adequately meet the future?

Let us start with the planning of the highway. Today, we are giving consideration to factors that no one seriously thought about a few years ago. It used to be standard practice when a highway was built through an urban area to head for the cheaper property. The highway people missed all the schools, hospitals, churches, and cemeteries and generally ended up going through the low-cost housing area. They often patted themselves on the back and explained how they were performing a sort of automatic and painless redevelopment for the city. They were getting rid of the unsightly housing, and the city did not even have to initiate a redevelopment project.

Somehow no one seemed to worry too much about all the people who lived there. There seemed to be a feeling that they were just sort of squatters anyway. For a long time, we did not find out how wrong this approach was because too often the people affected accepted their lot with the sense of overwhelming futility. Many families were not transients but lived in these stringent conditions generation after generation. Many found a sense of security in the crowded conditions in their neighborhoods and were definitely disturbed when well-wishers uprooted them and transferred them to small

individual houses in open spaces. I am reminded of the Indians on a reservation in northern California who, when the great white father in his supreme wisdom built them frame houses and moved them in, moved their animals into the houses and pitched their teepees in the backyards.

We no longer head for the cheap property. Serious studies are made to see just how the neighborhoods will be disrupted and how many people will be displaced. I submit that there would often be less actual community disruption if the highway went through the high-priced property rather than through the low. Bought out and turned loose, those people have the means to fend for themselves far better than the people from the poor neighborhoods. This is not done, however, because the people with the high-priced property know to whom to complain to stop such an idea, while the people in the low-priced houses usually do not know how to effectively resist. All of this has been helped immeasurably now that we can spend highway money to relocate and resettle the people we displace. In our planning we are now concerned about the broader community impacts.

A controversy we continually get into when we plan a freeway through a city involves the question, Shall it be depressed, elevated, or at ground level? Where there is opposition to the freeway anyway, the common cry is to depress it; in some cases we have had to do that. Although there are far more good features in an elevated structure, a viaduct through a city reminds people of the Chicago El with all its noise, dirt, and general unpleasantness. People generally seem to feel that a viaduct will be more objectionable than a depressed section. To combat this feeling, we built several viaducts in Sacramento, making every effort to make them as attractive as possible. We made them with long spans and few columns and gave a great deal of attention to aesthetics. I think that we have succeeded to a degree in creating a desirable viaduct.

A viaduct is also a good answer to the argument that an urban freeway takes great quantities of land off the tax rolls. After the viaduct is built, the land under the structure can be occupied by stores, offices, service centers, parks, and recreation facilities. We have a great number of offices, post offices, banks, restaurants, warehouses, and automobile repair shops, and parking lots planned, but it takes a while to get them going. In spite of the seeming convenience and cheapness of building under a freeway, it is still cheaper to build away from the structure unless the adjacent land is quite expensive. These users do return the land to the tax rolls, though, and afford the city a return on the land that would otherwise be occupied only by the highway.

There is a material saving to be realized in the construction of the freeway viaduct if there were assurances beforehand that there would be stores or offices under the structure. Rather than being made long with various attractive architectural treatments, the spans could be made short and the columns plain. In this way, the construction cost could be greatly reduced. However, we have not yet found this possible. If the state is to take the risk of being left with an unattractive design if the buildings are not built, the intended occupant must put up a sort of guarantee bond. We have not yet found anyone willing to do this. At the planning stage, it may well be 4 to 6 years before the tenant can move in, and there are not many businesses willing to tie up their money and guarantee what they will be doing that far in advance. Therefore, we are still faced with building a structure that looks good even if nothing is done to utilize the land under it and it stands there alone.

Freeways and rapid transit evoke common complaints—they cut swaths across the urban community. A suggestion that works well is to put them both on the same right-of-way and minimize the disruption. We have done this on several occasions with both trains and special bus lanes. We have run the transit lines down the middle of the freeway, and we have provided special bus lanes where the buses can travel unhindered by ordinary traffic. Both of these ideas work well as far as quieting criticism and taking the least possible land. There are many other difficulties that this common usage causes, but these are surmountable and the net result is a better facility for the community.

One of the curses of expanding traffic volumes is that, almost before the concrete gets a weathered look, it must be taken out to widen the structures. No one has money enough to build the ultimate facility the first time around. We try to build for the next

20 years and frequently end up barely building for the next 10. This brings the headache of widening freeways and structures without interrupting the heavy traffic that is already overloading the facility. We have developed a number of alteration procedures whereby the structures can be changed to a semicantilever construction and the spans lengthened without tearing out the whole structure. This saves some money, but the main benefit is the convenience and safety of travelers and the avoidance of a lot of traffic disruption.

Noise pollution is becoming increasingly important. We have made several special solutions that solved nasty problems. A couple of large walls and the underside of a structure reflected noise down into a small group of houses in a hollow. We faced the walls and the soffit with sound-absorbent material and cut the noise level down to a tolerable amount. Many of the viaducts we are now studying have sound-barrier walls at least along one side. It is an expensive and not-too-aesthetic solution but may be necessary in some cases.

With regard to noise and pollution, I think we have to be careful lest we get misled into curing the effect rather than the cause. We have built lengthy berms surmounted by concrete walls to act as sound barriers. We are considering building unsightly sound barriers on our viaducts. We have sunk freeways into slots and tunnels to cut down the noise. Are we not, however, getting the cart before the horse? Is burning down a maternity hospital the proper way to effect birth control?

If your dog annoys you by barking, do you get bigger earmuffs? We ought to be thinking about the source. Most of the highway noise comes from trucks. Proper mufflers and adequate housing of the engines would cut down the major part of the noise, but there seems to be a general hesitancy to press this line of attack. If an aroused citizenry can make Detroit build cleaner automobiles and force the oil industry to produce cleaner gasoline, there seems little doubt that the truck manufacturers can build quieter trucks. This is something that should be given careful thought before we spend millions of dollars building unsightly solid barriers to confine the highway noise.

The aesthetic treatment we apply to our structures has had a great deal to do with their acceptability. We have gone to great lengths to make the structures attractive and also to fit them into the environment. These treatments include special shapes for the superstructures, rounded corners, special railings with colored parts, columns with new and interesting shapes, and abutments that enhance the lines of the structure. We have worked with teams and committees of people to get early agreement and approval of the design of the structures. We have found that when we do this there is general agreement and approval of the structures after they are built. In the construction stage there is a similar attempt to alleviate the pain.

One of the big problems of urban construction is building over traffic. Where it is possible, it is nice to be able to use precast or prefabricated members and swing them into place in the wee hours of the morning. The spans are getting so long and the members so heavy, however, that this is not always possible. More and more we are forced to use falsework and run the traffic through it. Inevitably when there is a heavy volume of traffic running through falsework, someone hits the falsework and occasionally brings the whole bridge down. We have worked hard on safety precautions to prevent catastrophes. We require steel or timber supports of considerable strength and then make sure that they are securely anchored at both top and bottom. The exposed face of the falsework is sheeted with 2-in. timber, and a regular metal highway guardrail is placed in front of all that. These precautions, coupled with generous openings, have served to minimize the hazard when falsework must be used with traffic.

There are many other things that can be done to ensure that the freeway will have a better reception in its new neighborhood. Noise and dirt during construction must be held to a minimum. We are careful about where we permit double shifts so that we do not get complaints about keeping people awake. Haul roads must be kept well watered to keep down the dust. Hauling on city streets is avoided wherever possible.

In some cases, contractors have launched their own public relations drives. Teams of men have visited all the neighbors and distributed literature telling about what will be going on and offering to discuss any complaints they may have. It is no surprise that a little personal attention will forestall a lot of criticism. A contractor was to

build a skyscraper in the heart of the San Francisco financial district. He knew that for months a pile driver would be shaking the whole area. He hired a public relations firm that gave the pile driver a name and put out daily reports on his foibles and accomplishments. The pile driver developed into a personality rather than a nuisance. A lot of criticism and unpleasantness can be avoided by the proper approach.

Many of these solutions are merely expedients to combat the problem of the moment. We are slowly moving forward and raising our sights. Rather than dodging the rocks and trees, we are getting more foresight to look to see if there is not a better way to travel. We have come so far so fast that we wonder where we are going. We struggle through the design and the public resistance and finally get a freeway constructed through town, but everyone knows it is far from an ideal situation. A freeway is not easy to live with. The noise, the pollution, the division of the neighborhood—these things are all there to some extent no matter how well we plan. There must be a better way, and we wonder what it is.

We often say we should build the freeway first and let the community develop around it. The way it would probably develop would be that the businesses and commercial places would be as close as possible to the freeway to get the access and the exposure. The residences would probably be as far away as possible and yet still have access. This leads to another solution that is being tried in some places in the world. That is to buy a wide strip of land instead of just a 200-ft right-of-way, open up maybe a mile-wide strip with the freeway down the middle, and then let the commercial development take place along the freeway and the residential development away from it. The end result would probably be a much more desirable solution, but this embodies redevelopment, community planning, land use management, and a lot of things other than highway design. Right now this approach seems a long way in the future. Assuming that the highway is here to stay—and I do not think that any of us can assume otherwise—we are going to have to aim toward some such satisfactory solution. We are still trying, but it may be some time yet before we can really feel that we have made the freeway into a good neighbor.