Frederick W. Cron on Highway Design Under Evolution

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Richard Weingroff
Office of Infrastructure

Email:
Richard.Weingroff@dot.gov
Phone: 202-366-4856

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Richard's Bio

Frederick W. Cron on Highway Design Under Evolution

Frederick W. Cron, an engineer with the U.S. Bureau of Public Roads from 1928 to 1969, was also a historian of highway design. While living in retirement in Colorado, he saw a letter in the *Denver Post* advocating a scenic design for Interstate highways. Mr. Cron wrote the following letter that was published on November 25, 1973:

For many years I have been an enthusiastic advocate of the type of highway described by Gene Martin in his letter, "Scenic Design for Interstate" (Open Forum, July 29). The background for this type of highway design may be interesting to your readers.

In the '30s and early '40s a number of states found some of their heavier travelled roads inadequate for the traffic they had to carry and decided to add more lanes. Instead of widening the existing road they made a divided highway out of it by laying down another roadway separated from the older one by a median. In keeping with the progress in highway engineering that had occurred since the old road was built, the new roadway was built to higher standards-wider paving and shoulders, flatter horizontal curves, longer vertical curves, greater sight distance.

Because of the higher standards the new roadway was on a different grade and line from the old roadway, most of the time, and the warping and adjusting between them was done in the median, which in some places was a hundred or more feet wide. In a few cases large holdings of private property were left in the median, as on the outskirts of Wytheville, Va.

This type of highway design enabled the states to provide modern up-to-date alignment for half of the traffic without scrapping the investment in the old road. It also permitted them to build the new roadway without inconvenience to traffic and at a considerable saving in cost.

The divided 4-lane highway began to come into general use just before World War II, and . . . the earlier divided highways (and many of the later ones) were designed with the two roadways strictly parallel to each other in line and grade. However, the East, some imaginative engineers and parkway planners of the Bureau of Public Roads and the National Park Service realized that it was not really necessary that the two roadways parallel each other, and in 1940 they planned the Washington-Baltimore Parkway to have two one-way roadways entirely independent of each other within a very wide right of way, or elongated park. This road was the first to be deliberately planned with independent roadways-the prototype of the Kentucky and Michigan Interstates . . . and of many other roads in the U.S.A. and abroad.

At Rockerville in the Black Hills the South Dakota road builders left the old ghost town in the median and ran the two roadways around it. Colorado has a very fine example on I-70 near Agate, affording magnificent views of the Rockies from the prairie.

Abroad, some of the post-war German autobahnen, and Italian autostrade are variable median, but the most impressive example anywhere in the world is the Via Anchieta from Sao Paulo to Santos, Brazil, which in a distance of 34 miles has 13 major bridges, 20 viaducts and 4 tunnels.

Under favorable conditions variable median design costs less to build than conventional or uniform median, even allowing for the greater acreage of right of way needed. It is seldom economical for urban locations because of land costs.

It is not appropriate where the general trend of the highway is at right angles to the natural drainage, because under these conditions it takes much more cut and fill for two separated roadways than for two roadways parallel and close together. The landscape damage is also greater.

For variable median designs the roadways should be occasionally intervisible and also not too far apart (usually not more than 1/4 mile), or else drivers will become apprehensive over the lack of opposing traffic. Also extra precautions must be taken at the interchanges to prevent accidental wrong-way entry.

Frederick W. Cron
Consulting Highway Engineer
Lakewood, Colorado

Frederick W. Cron joined the U.S. Bureau of Public Roads in 1928, working for 28 years on the design and construction of national park roads and national parkways in the East. After serving with the U.S. Army Corps of Engineers in Alaska during World War II, he was Design and Construction engineer for BPR's Philippine Division. Later he became Regional Engineer for the BPR's Region 15, which was responsible for administering design and construction contracts for the National Park Service, Forest Service, and other agencies. From 1961 to 1969, he was Regional Design Engineer for Region 9, based in Colorado. Mr. Cron retired in 1969. During his career and in retirement, he was a historian of the design of highways. *Public Roads* magazine published a series of eight articles by Mr. Cron under the overall title "Highway Design for Motor Vehicles-A Historical Review" (December 1974 through December 1976).

Contact

- **Richard Weingroff**
  Office of Infrastructure
  202-366-4856
  E-mail Richard
  Richard's Bio

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