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Director of Public Roads Frank Turner answers some questions about roadside hazards—and explains some of the problems that confront highway officials

'We Have to Look at Both Sides'

by **Phyllis Dee Lovoca**
Associate Editor, HIGHWAY USER

FRANCIS C. TURNER, director of Public Roads, came up through the chairs. He has been in the Bureau of Public Roads for 38 years—ever since his graduation as a civil engineer from Texas A and M.

He is a gentle appearing, quiet spoken public servant. But the Federal Government juggernaut has by no means quelled Frank Turner's ability to hold or express strong, individual opinions. He does not speak the guarded gobbledegook of many civil servants, even those at the highest levels. He talks freely. He sounds like a man who is his own man. He obviously feels himself part of a fraternity of highway officials and is proud of the brotherhood.

We asked him if he thought this an unusually difficult time to be in the high office he occupies or, indeed, to be a highway official at any level.

"It might be one of the most difficult times to be any kind of a public official," he answered. "In the highway field, we have added socio-economic and other considerations to the engineering approach that we had 15 years or so ago. Yes. I think it is a difficult time."

Critical? The August issue of HIGHWAY USER carried an interview with Rep. John A. Blatnik (D., Minn.) on hearings of the House Special Subcommittee on the Federal Aid Highway Program, of which the Congressman is chairman. In particular, the interview dealt with so-called roadside hazards—bridge piers too close to the road, sign mountings that could demolish cars out of control, guard rails which either fail to guard or seem to constitute still another obstacle. Parts of the interview could be construed as critical of some highway officials.

We wanted Mr. Turner's comments on the roadside hazard situation and on the Blatnik hearings, in particular. We asked if he had read the HIGHWAY USER interview.

"Oh yes," he assured us. "I've read that, of course."

The conversation continued as follows:

Mr. Turner, what was your reaction to the interview with Representative Blatnik?

Well, first off, highway officials are for safety as much as the Congressman is. Maybe more, if that is possible. It is a fundamental consideration in everything we do. Here at BPR, we think we pioneered in highway safety. Our designs and construction methods are all aimed at increasing the safety of the highways for the user. This is so elemental with us we have not separated safety out of the highway program as a single item. It is threaded through everything and has been from the beginning of the present program and before. Sight distances, widths of lanes, clearances, ratio of curvature, shoulders—all these are elements of

Safety Stripes

Promotion of the use of a red and white striped base for arterial stop signs is a project of the Idaho-Montana-Utah Council of the United Commercial Travelers. Designed by C. E. Fritz, of Billings, Mont., it has been used experimentally in two cities at intersections where trees, shading, and poor background have reduced the visibility of the conventional stop sign installations. A before and after survey of the number of drivers failing to stop has shown a remarkable reduction at intersections where the striped base has been installed, according to sponsors, who also state that its use has cut the number of accidents at intersections so marked.

traction and penetration characteristics of soft soils were studied in lab tests in which weighted tires were driven by means of a test rig through a 75 foot long bin of mud.

From their measurements of soft soil and other surface obstacles the scientists devised a statistical sampling of the earth's terrain which was incorporated in the computerized equations.

Van Deusen said the mobility studies identify six major areas of interest: soft soil mechanics, vehicle dynamics, obstacle crossing capability, obstacle avoidance, environmental factor classification and amphibious operation.

In addition, the computer study provides engineers with information on vehicle induced human respones related to driver fatigue and efficiency.

The Chrysler scientist believes his mathematical investigations into vehicle mobility will reduce the lead time required for the development of specialized vehicles for the military.

"People are constantly thinking of new ideas in military vehicle mobility. Now we can analytically evaluate new concepts long before they reach the hardware stage," he said.

Along the Way

by RICHARD L. REILLY
Editor

Vacation Notes

LAST MONTH we took a vacation motor trip to central New York State. The route we chose from Alexandria, Va., was through Maryland, Delaware, New Jersey and New York. The first two segments—the Capital Beltway and the Washington-Baltimore Parkway—were toll-free; but then the tolls began, as follows: Baltimore Tunnel, 50 cents: Kennedy Highway (through Maryland and Delaware), $1.35; Delaware River Bridge, 50 cents; New Jersey Turnpike $1; Garden State Parkway, $1; New York Thruway $2.75. The total was $7.10—and that was one way. . . . While in New York we visited Lake George, Lake Placid and other areas in the Adirondacks, and are happy to report that the scenery is as breathtakingly beautiful as ever. Business was booming at Lake George, but resort and motel operators at Lake Placid complain that their business has been hurt this year by Montreal's Expo '67. Vacationers heading for Expo drive straight up New York's Northway, bypassing Lake Placid, some 30 miles to the west. . . . And here is one vote for the Northway as a splendid highway, both from the engineering and scenic standpoints. It's toll-free, too. . . . Something we would recommend as definitely worthwhile for anyone traveling in that area is a tour of historic Fort Ticonderoga, now almost completely restored. The massive stone fortress was occupied at various times by the French, the British, the Americans, and the British again. There are fascinating exhibits depicting each era, including, of course, much Indian lore. . . . And for small children, a visit to North Pole, N. Y., at the foot of Whiteface Mountain, is a must. Here, in an intriguing village dedicated to make-believe, live Santa Claus and his helpers in peppermint-striped buildings, along with the reindeer and other animals. Adults will find it interesting, too. . . .

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ANOTHER of our favorite spots, in central New York, is Cooperstown, home of the Baseball Hall of Fame, plus five other museums, all worth visting. Located on the shores of nine mile-long Otsego Lake, it was the setting for James Fennimore Cooper's Leatherstocking Tales, and it is a perfect gem of a village. . . . At our hometown of Little Falls, for the first time we went "prospecting" for "Little Falls diamonds," in reality forms of quartz crystals which strongly resemble the real thing. This involves using a hammer, chisel, pick-ax and sledge hammer—and banging away at rocks. If you are lucky you will chip away in the right place and find a lode. We were fortunate and dug out an even dozen of the "diamonds." . . .

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HAVE YOU tried one of the do-it-yourself car wash machines yet? We find they work quite well—and now most of them have vacuum hoses so that you can clean the interior of your car, as well. . . . Quick now, how many light bulbs are there in the average 1967 model automobile? Would you believe 34? Well, that is the answer, and it is an all time high—two bulbs more than were in the 1966 models. . . . Monsanto's Textiles Division suggests this method of determining whether your tire tread has been worn to the minimum depth of 1/16 of an inch: insert the head of a book match into the middle groove of your tires; if you can see half of the head, it's time to buy a new tire. . . . Plastic shrubs should be placed along the nation's highways, a California highway commissioner believes. He says that they wouldn't require watering, as do the real variety. . . . Seattle police encase parking tickets in plastic envelopes—so that motorists can't argue in traffic court that they couldn't read the summons because it was rain soaked. . . .

the safety of the highway.

On roadside hazards—take the example of a massive sign that could be hit by a car out of control.

We have to look at both sides of this. The sign was put there to convey a message to the motorist so that he can operate safely. We know that, in order to convey that message, the sign must be large enough so that it can be read. What is more, it must be read far enough away so that the motorist will have time to digest the message and act in accordance with it without getting confused. The sign must be designed to withstand a wind load of 80 to 100 miles an hour. This means a large mounting post. This, in turn, requires a heavy foundation. Then there is the guard rail.

The guard rail was not put there to protect the sign. We certainly are not more concerned with the sign than with the motorist who might run off the road. The guard rail was put there on the theory that it will help protect the motorist. If he is going to run off the road, he is better off hitting a guard rail than the concrete mounting.

Now we have a decision to make. What is more important to the greater safety of the most people? A massive sign that can be read? Or avoiding placement of an obstacle where, if someone should run off the road at just that point, he might hit the guard rail or even go through to the concrete mounting?

We concluded that a good sign message is probably the more important.

These are not things we overlook. They are decisions we have to make.

Do you feel that the hearings on roadside hazards will be helpful in general?

No doubt about it. The hearings will create a further awareness and an opportunity for corrective action—not only on the part of the highway people but on the part of the public, as well. The public must be willing to pay for this corrective action, you know.

You testified before the Blatnik Committee. Do you feel that the committee members were sympathetic to the problems of highway officials?

I think that the committee is quite knowledgeable and sympathetic. The committee's problems and highway officials' problems actually are the same. It is a good committee.

Do you feel that highway officials, for the most part, have been as much aware as they should be of roadside hazards?

"If the critic would inform himself as to what we are trying to do, he would take a very different tack. We are so conscious of these things that it hurts."

No. The fact that some of these hazards are subject to correction is clear indication that we have not been as aware as we should have been.

We have not been perfect. We could have and we should have done a better job. We will try to correct the faults that were brought out before the committee as quickly as possible.

But we knew these things about ourselves. We had been discussing them—working on them before the hearings. And, you know, the Bureau of Public Roads furnished the committee with the ammunition it used.

When the Bureau of Public Roads approves State highway plans, are roadside features such as guardrails, distance of abutments from the road and so on taken into account?

Definitely, yes.

Has BPR set up standards with regard to this whole subject?

Standards are not set up within the Bureau as such. We take the standards that are developed by committees of the American Association of State Highway Officials.

We try to operate this way as much as we can. We think this is a far better way than telling the States what they have to do. This kind of operation is the basis of the term—"a partner relationship." It certainly makes for a better working relationship with the States.

Are these standards being improved all the time?

Yes. We have research going constantly on these and other elements of highway design. All of the design people in BPR and the State highway departments are constantly trying to think of better ways to do things. Several AASHO committees are on this job all the time. They and we are always trying to improve the policies and practices of the whole highway engineering profession.

You stated in your testimony before the Blatnik Committee that correction of roadside hazards would cost a great deal of money. What is your estimate of the amount that would be involved?

I said a billion dollars or more. However, I noticed that members of the press did not pick this up in proper context. They reported that I said it would cost this much to correct "mistakes." Actually, I based the figure on the inventory for the spot improvement program on the ABC system. "Mistakes" is not what I said or meant. Rather, I had in mind correcting deficiencies on the basis of the spot improvement program.

For example, a narrow bridge put in 40 years ago was completely adequate for the time. Today, its lack of width is a deficiency, and should be corrected. But it was not a "mistake" 40 years ago.

I was thinking of this billion dollars as the figure necessary to "patch the roof" until we can replace the house—which, over a period of years may cost two or three hundred billion dollars.

If the money were made available tomorrow, how long do you think it would take to eliminate the kind of hazards to which Congressman Blatnik has referred?

We could do it in one year to 18 months without difficulty.

To a large extent, we are trying to do this anyway. Most of what was discussed was on the Interstate. We are making an inventory with cost estimates of the kinds of things shown in the pictures at the hearings. We plan, as soon as the inventory is completed, to utilize funds now available for a corrective program and do that in about a year. On the ABC system, we expect to do it in about four years time.

The thought is to use Highway Trust Fund money for this?

Yes. We would add it on to future cost estimates for the highway program. We would defer new construction and substitute this corrective work now.

Do you feel that some of the roadside hazards now in existence are due, at least in part, to the fact that the emphasis on "the second collision" and the "second chance" is relatively new?

We have been thinking about this all the time.

The "second collision" is a term which our new sister agency, the National Highway Safety Bureau, has coined or at least brought to public notice recently. But everyone who has been working in safety has been concerned about this all along. Crash helmets and seat belts, for example, are old stuff.

Dr. Haddon's Bureau is concerned with the vehicle so he is attempting to do something to pad the vehicle and minimize the second collision.

By highway design, we are trying to eliminate the first collision. Still, if a vehicle does run off the road, we hope to assure the motorist a "second chance" by eliminating obstacles he might hit. We are going to try harder on that.

There has been some criticism by some representatives of the press to the effect that highway officials are unwilling to give new ideas and new inventors an opportunity? Do you think this criticism is valid?

I think that is so much poppycock. It indicates a lack of thorough acquaintanceship with the subject. If the critic would inform himself as to what we are trying to do, he would take a very different tack. We are so conscious of these things that it hurts.

In BPR, for example, for years we have expended as much of our effort in terms of man hours in the search to find ways to improve designs and devices as on the roads themselves. We are constantly doing research—doing experiments—doing studies on basic needs—on what the "customer" wants and how we can best supply his needs. At least half the staff is engaged in trying to come up with better ways to do things. We are constantly inventing or—to use the term that's around right now—"innovating." We are engaged in this ourselves and in fostering it in others.

People who make that kind of criticism haven't bothered to learn the facts.

You know, it isn't always possible to carry out all these "innovative" dreams. Somebody has to take a hard look at them in terms of money, not to speak of the laws of physics.

Do you feel that most State highway officials follow in practice AASHO's "Yellow Book" on safety design and avoidance of roadside obstacles?

In varying degrees. All of them are in complete agreement and are sympathetic with the suggestions in the "Yellow Book." The only point of disagreement relates to the matter of costs. All highway departments are faced with needs that exceed their capabilities to fund. So they are faced with choices every day. The choices are between what can be done and what must be set aside.

When we first issued the "Yellow Book" there were some misunderstandings about it. Some people thought it was intended as a book of directives. Actually, it is a report of the recommendations made by a special committee appointed by AASHO to study things that have an effect on safety. Where possible and to the extent practical—and as soon as possible and practical—we hope these recommendations will be followed in all the States. I think this is understood now.

"I think there is a lack of appreciation of what highway people are doing and trying to do. They make some errors like everybody else. But there are a lot of factors with which they must treat."

What is your own estimate of the number of fatalities which could be avoided if roadside hazards and obstacles were eliminated?

Based on the figures and experience that we have had to date, I would think they would be much fewer than the 15,000 to 18,000 a year mentioned at the Blatnik hearings. My thought is about 10 per cent of that, or three to five per cent of our total traffic fatalities.

We ought to eliminate these accidents, of course. But the odds against a vehicle's going off the road at the exact spot where one of these hazards exists are fairly high. The substantial proportion of accidents on the Interstate System involving a vehicle running off the road is as high as it is because most other causes have been eliminated. The fatality rate has been reduced from 9½ per 100 million vehicle miles on other roads to 2½ on the Interstate. That is a substantial reduction. Many accidents in this 2½ figure involve alcohol. If we could eliminate that factor, we could bring the rate way down. But since that is impossible, we must concentrate on minimizing the result. And having gotten the rate down to 2½ per cent, then we have to concentrate on eliminating getting it still lower.

Still you see why we have been intent on building the Interstate. You take money away from that program and use it for some other things and you are dealing with the small part of the problem.

Do you feel, as does Congressman Blatnik, that part of the difficulty in building highways without these obstacles is owing to a lack of communications within highway departments themselves?

That is a pretty good characterization of it.

It is largely a case of these things being considered in relation to the total decision. And most highway people have concentrated on the largest part of the problem. There has been a "communications gap" in that sense.

We are attempting to take care of that now. We are scheduling a number of meetings of our people here at BPR, as are several of the State highway departments, to give the same things that were presented to the Blatnik Committee. Michigan has already set up a date with Mr. May, the committee's chief counsel, to present to 400 or 500 highway folks and others interested the series of pictures shown the committee. Other States are going to do some of the same thing.

In your contacts with top State highway officials, do you find an increasing consciousness of safety responsibility?

Yes. Yes, I do. Very much.

Mr. Turner, how do you feel about the public attitude today with respect to highway officials?

I think there is a lack of appreciation of what highway people are doing and trying to do. They make some errors like everybody else. But there are a lot of factors with which they must treat. This is a field in which everybody is an expert. But highway people have to make the decisions in the stress and strain of the game. Everybody can do a better job of making judgments after reading all the sports pages on Monday morning. We can do some Monday morning quarterbacking ourselves. But our decisions are frozen in steel and concrete and we may not get a chance to change them for 50 years.

All the same, we appreciate suggestions that the public is making and the public's interest.

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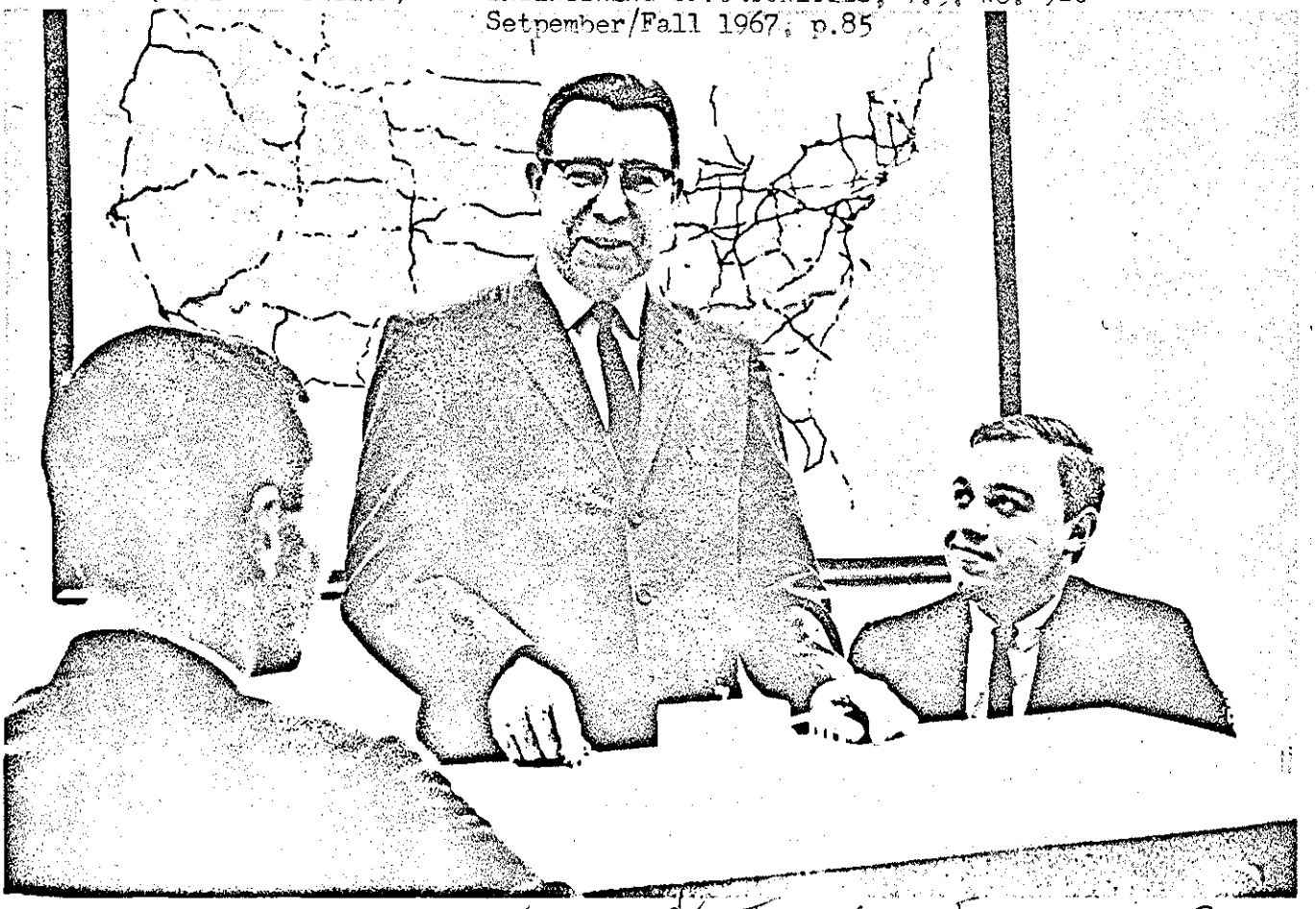

A Comment for Engineering Students from Francis C. Turner, Director, Bureau of Public Roads

Turner, Francis C.

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Francis C. Turner

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