HIGHWAY SAFETY, DESIGN AND OPERATIONS

ROADSIDE HAZARDS

(90–21)

HEARINGS

BEFORE THE

SPECIAL SUBCOMMITTEE ON THE FEDERAL-AID HIGHWAY PROGRAM

OF THE

COMMITTEE ON PUBLIC WORKS

HOUSE OF REPRESENTATIVES

NINETIETH CONGRESS

FIRST SESSION

MAY 23, 24, 25, JUNE 6, 8, 20, 21, 22, 23, 27, 28, 29, JULY 18 AND 20, 1967

Printed for the use of the Committee on Public Works

U.S. GOVERNMENT PRINTING OFFICE

87-757 O WASHINGTON : 1968

For sale by the Superintendent of Documents, U.S. Government Printing Office
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*Members appointed to subcommittee in the 90th Congress.

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HIGHWAY SAFETY, DESIGN AND OPERATIONS
Roadside Hazards

TUESDAY, MAY 23, 1967

HOUSE OF REPRESENTATIVES,
SPECIAL SUBCOMMITTEE ON THE FEDERAL-AID HIGHWAY
PROGRAM OF THE COMMITTEE ON PUBLIC WORKS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:15 a.m., in room 2167, Rayburn Building, Hon. John A. Blatnik, chairman, presiding.

Present: Messrs. Fallon (chairman), Blatnik (subcommittee chairman), Wright, Johnson, McCarthy, Howard, Cramer, Cleveland, Clausen, Duncan, Schadeberg, Zion, McDonald, and Denny.

Also present: Walter R. May, chief counsel; Robert L. May, minority counsel; George M. Kopecky, chief investigator; Robert G. Lawrence, associate counsel; Salvatore J. D'Amico; Paul R. S. Yates, minority professional staff member; Stuart M. Harrison, staff assistant; Mrs. Mildred Rupert, staff assistant; Miss Agnes GaNun, staff assistant; Mrs. Shirley Knighten, staff assistant; and Mrs. Kathryn Keeney, chief clerk.

Staff, Committee on Public Works: Richard J. Sullivan, chief counsel, and Clifton W. Enfield, minority counsel.

Bureau of Public Roads: Charles Harrell, visual information specialist.

Mr. BLATNIK. The Special Subcommittee on the Federal-Aid Highway Program of the House Committee on Public Works will please come to order.

The significance of the testimony which you are about to hear in these series of public hearings beginning today and its important bearing on the lives and futures of millions of our citizens and the graphic material presented will make itself clear as the record unfolds.

Now I have an introductory statement to read at this point, which we usually do at the beginning of these hearings, and the minority leader will be recognized immediately following that for any statement or comments which he deems appropriate, which usually are very pertinent and to the point.

We begin today a series of hearings to inquire into certain questions bearing upon the design and operational efficiency of our highways.

In the carrying out of our ambitious highway program under the terms and spirit of the Federal-Aid Highway Act of 1956, it is absolutely essential that every aspect of the program be performed in such a way as to preserve the confidence of Congress and of the American people.

At the present time, we are spending more than $4 billion—these are Federal funds—a year out of the highway trust fund for our Federal-

aid programs. More than $3 billion of this sum is being expended for work on the Interstate System and the remaining $1 billion for the primary, secondary, and urban construction.

In the past decade more than $45 billion has been committed to these programs, the Federal share alone of this $45 billion being in excess of $33 billion.

Without question tremendous progress has been made since 1956. The Federal Government, the States and industry have, acting in concert, made great strides from a small beginning. There is much at which we may point with pride.

Nevertheless, in a program so vast, it could be expected that the way would not always be smooth, nor free from human error or occasional failure. Our hearings in the past have shown that such is, in fact, the case.

However, as our hearings have identified various deficiencies and weaknesses which were affecting the program, the response of the Bureau of Public Roads, the American Association of State Highway Officials, individual State highway departments, and other interested organizations, has been prompt and effective. This willingness to act and the corrective measures taken have been most gratifying to the committee.

While I don't normally care to anticipate the substance of public testimony we are going to hear, this time I feel compelled to do so to some degree because the matters concern the safety and well-being of our citizens.

We need not dwell here on the deaths, the suffering, and the economic costs involved in this Nation's automobile accident toll. The Federal legislation passed last year and the programs underway are designed to attack this tragic problem.

Without question, in time there will be success. However, I am concerned about the time element particularly, because I am certain that significant results can be accomplished right now.

Material developed by the staff has convinced me that there is more that can be accomplished in the design of our highways from a safety standpoint. If unnecessary hazardous features continue to be designed and built into our new highways, we must take steps to identify and eliminate them.

It is late. This is 1967 and more than one-half of the Interstate System has been completed and opened to traffic. In a program where Federal funds alone are being spent at the rate of over $10 million a day and where certain built-in mistakes may be suffered for decades, great urgency must attach to required changes.

This subcommittee again expects the responsible officials of the Federal and State Governments and other organizations associated with the highway fraternity to give attention to these hearings and, working cooperatively, expedite needed improvements.

That concludes my statement. Now I will be pleased to recognize the gentleman from Florida, Mr. Cramer.

Mr. CRAMER. Thank you very much, Mr. Chairman, and of course I join you in your remarks and would like to add a few comments of my own. It is interesting to reflect on the fact much has been said in Congress, particularly in recent years, with regard to automobile safety, and Congress has passed legislation to provide for safety features to

be included in automobile construction to guarantee the automobile purchaser with the maximum amount of safety features in the automobile. That is one side of the coin. The other side of the coin is the building of safety features into the highways themselves and, as I understand, that is the subject matter of these deliberations.

The Federal-Aid Highway Act of 1956, enacted nearly 11 years ago, imposed a tremendous task upon the State highway departments and the Bureau of Public Roads, in that they were asked to build the greatest public works project in history—41,000 miles of high-speed, access-controlled highways, in addition to the regular Federal-aid highway program, and to do this within a limited period of time.

The Interstate System will not be completed on schedule, but this is largely because of lack of adequate financing, not because of failure of our highway builders. In terms of production, the location and building of highways, the State highway departments and the Bureau of Public Roads have done a magnificent job.

Despite this fine work, or more likely because of it, not enough attention has been given to making our highways as safe as possible. The sheer magnitude of the job of locating, designing, and building a 41,000-mile system of high-speed highways within a limited time may have so occupied the time and attention of our highway builders that they overlooked some safety measures which now appear obvious.

Whatever the reason, it is apparent that there are many unnecessary hazards within the rights-of-way of our most modern highways. Any observant driver can point out some of these hazards, such as culverts, bridge piers, unnecessary signs, improperly placed guardrails, deep ditches, and steep cut and fill banks, and trees and boulders which "beautify" the highway. Collision with any of these can kill a motorist who has the misfortune to drive or be forced off the paved roadway.

Drivers veer off high-speed highways for a variety of reasons. In some cases the driver is at fault; he may be drunk, speeding, careless, or asleep. In other cases careful, law-abiding drivers may swerve to miss a child or an animal or a disabled car, may hit a slick or icy spot, or be forced off the highway by another car.

Regardless of the reasons why a driver may leave the paved portion of a high-speed highway, roadside areas should be sufficiently clear of obstructions to give him an opportunity to regain control of his car. He and his passengers should be given a reasonable chance of survival and not be faced with the death penalty for a comparatively minor error.

Drivers and their passengers have not been given that chance in many instances in the past. According to figures published by the National Safety Council, out of 49,000 traffic fatalities in 1965, 17,100—or 35 percent—were the result of single-car accidents in which cars left the roadway and overturned or collided with something. A substantial number of these 17,100 people—and thousands killed in other years—might be alive if more attention had been paid to clear, unobstructed roadside areas.

Past investigations and hearings of this subcommittee have resulted in the highway departments and the Bureau of Public Roads focusing increased attention on important elements of the Federal-aid highway program, and I congratulate the subcommittee for getting those results. I am satisfied that these hearings will prove equally as valuable as any

we have held thus far, because they will result, I believe, in saving lives as well as money. Thank you, Mr. Chairman.

Mr. BLATNIK. I thank the gentleman from Florida. One brief announcement. We are very pleased to have with us in the audience in attendance this morning about 60 students from Broome Junior High School and Richard Montgomery High School over in Rockville, Md. These students are sitting over there.

We welcome you. You are accompanied by two of your teachers, Mrs. Gail Auricchio and Mr. Ronald Burdette.

These students are a part of a larger group, as I understand. Is that true? About 130 students of the total group is visiting Capitol Hill and visiting other committees and activities. I think I can say without prejudice that you are witnessing the best session this morning.

No one challenges the remark? We will let it stand for the record. We welcome you. Now back to the hearings. Mr. May and Mr. Kopecky, we will have you open the hearings. Will you please stand and be sworn in at this time? Raise your right hand. Do you solemnly swear that the testimony you are about to give before this committee will be the truth, the whole truth, and nothing but the truth, so help you God?

Mr. W. MAY. I do.

Mr. KOPECKY. I do.

Mr. BLATNIK. Mr. Walter May, chief counsel of the Special Subcommittee on the Federal-Aid Highway Program, you are recognized.

Mr. W. MAY. Mr. Chairman, from time to time during the course of these hearings, Mr. Kopecky, of the staff, and I may be offering testimony. That is why we asked to be sworn in at this time. May we call as our first witness Mr. Charles W. Prisk.

Mr. BLATNIK. Mr. Charles W. Prisk is the Deputy Director, Office of Traffic Operations, Bureau of Public Roads, U.S. Department of Transportation. Please stand up, Mr. Prisk. Raise your right hand.

Do you solemnly swear the testimony you are about to give before this subcommittee will be the truth, the whole truth, and nothing but the truth, so help you God?

Mr. PRISK. I do.

Mr. BLATNIK. Please be seated. Mr. May.

Mr. MAY. Mr. Prisk, will you identify yourself for the record, please?

TESTIMONY OF CHARLES W. PRISK, DEPUTY DIRECTOR, OFFICE OF TRAFFIC OPERATIONS, BUREAU OF PUBLIC ROADS, U.S. DEPARTMENT OF TRANSPORTATION

Mr. PRISK. I serve presently as Deputy Director in the Office of Traffic Operations at the Bureau of Public Roads, in the Department of Transportation.

My education has been in the field of civil engineering. I have had graduate training at the Yale Bureau of Highway Traffic, in the field of traffic engineering.

This has been largely my career, in traffic engineering. I have approximately 4 years of highway department experience in Connecticut.

In 1935 I started with the Bureau of Public Roads working in the fields of planning and in traffic and research, and have continued until this time, gradually increasing my specialization in safety.

I was made responsible in 1957 for the conduct of the study directed by this committee, by the Subcommittee on Roads of this committee, and was the principal author of a report on the Federal role in highway safety. This was the result of an exhaustive 3-year study directed to highway safety needs as they were seen at that time, at the outset of the Interstate program.

I served as assistant to the Commissioner of Research in the Bureau of Public Roads, and from that post went to my present position as Deputy Director, first in the Office of Highway Safety which was organized in 1961 in the Bureau of Public Roads, and this office has very recently been changed to Office of Traffic Operations. I continue in that post.

My affiliations, professionally, have been with a number of national organizations. I think perhaps the most important for the record and this committee is the fact I have served since 1944 with the American Association of State Highway Officials committees in the traffic field, presently as the secretary of two of its committees concerned with traffic matters.

I was Chairman of the Highway Safety Committee of the Highway Research Board from 1962 to 1967. I am a member of the advisory section on their cooperative research program, which is participated in by all of the State highway departments and the Bureau of Public Roads.

I did have the honor, about 10 years ago, of serving as president of the Institute of Traffic Engineers and have been head of its international relations committee for the past several years.

One other responsibility possibly related to the work of this committee, as you start your investigation, is the function that I perform as vice chairman of the National Joint Committee on Uniform Traffic Control Devices. This is the standardization body responsible to five principal national organizations for the development of standards for traffic control devices.

I have been associated with the National Safety Council and worked with its traffic conference, and am a member of several overseas groups also which are concerned with traffic and safety work, both operational and in the research field.

I think maybe this is enough, Mr. Chairman, to give you an idea of the deep interest I hold in the subject you discuss today.

Mr. W. MAY. Mr. Chairman, Mr. Prisk is actively associated with a two-page list of organizations related to traffic engineering and safety on the highways. Also I notice Mr. Prisk has received two commendations, one from the U.S. Department of Commerce, Silver Medal of Merit in 1952, and second, the Matson Memorial Award for outstanding contribution to the advancement of traffic engineering in 1959.

Mr. Chairman, as has been customary in the past, during this current effort cooperation received by the staff from all agencies and persons has been superb. As an example of this, I would like to explain that Mr. Prisk, for some time now, has been assigned by the Department of Transportation, Bureau of Public Roads, to the subcommittee to render us aid and assistance. That he has done. He will

be present throughout the hearings to help with his testimony and advice.

Mr. Prisk, will you kindly keep your position. We shall call upon you periodically as we proceed. Mr. Chairman, may we now call as a witness Mr. Joseph Linko.

Mr. BLATNIK. Mr. Joseph Linko, from New York City. Mr. Linko, will you please stand and raise your right hand.

Do you solemnly swear the testimony you will give before this subcommittee will be the truth, the whole truth, and nothing but the truth, so help you God?

Mr. LINKO. I do.

Mr. BLATNIK. Please be seated.

Mr. W. MAY. Mr. Linko, will you idenitfy yourself for the record. Give your name and address.

TESTIMONY OF JOSEPH LINKO, NEW YORK CITY, N.Y.

Mr. LINKO. My name is Joseph Linko and I live at 4036 Third Avenue in the Bronx.

Mr. W. MAY. How are you employed, Mr. Linko?

Mr. LINKO. I do electronic TV work.

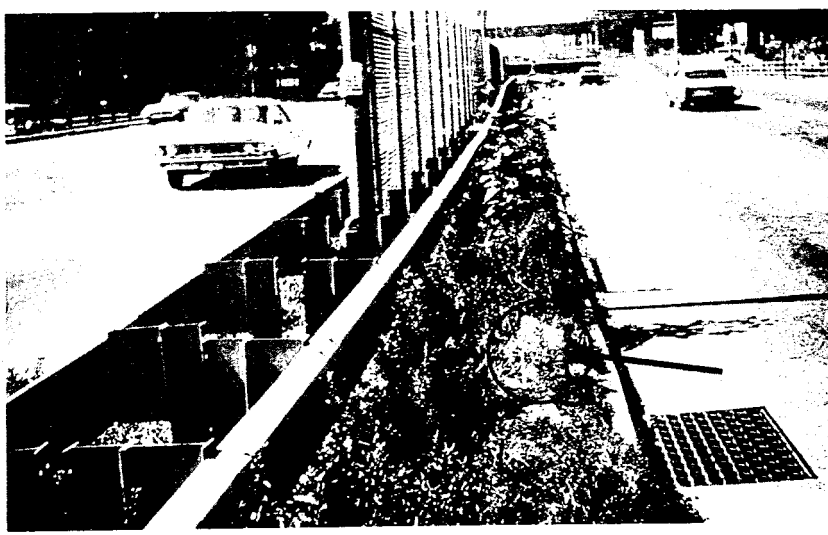
Mr. W. MAY. Television repair?

Mr. LINKO. Yes, sir.

Mr. W. MAY. Mr. Chairman, we on the staff are aware of Mr. Linko's interest in highway design and construction. I would ask him now to present to the committee through the use of slides and explanation what he has developed on the subject during the past 4 years. Will you proceed, Mr. Linko?

Mr. LINKO. Yes.

(At this point slides were shown with the following colloquy:)



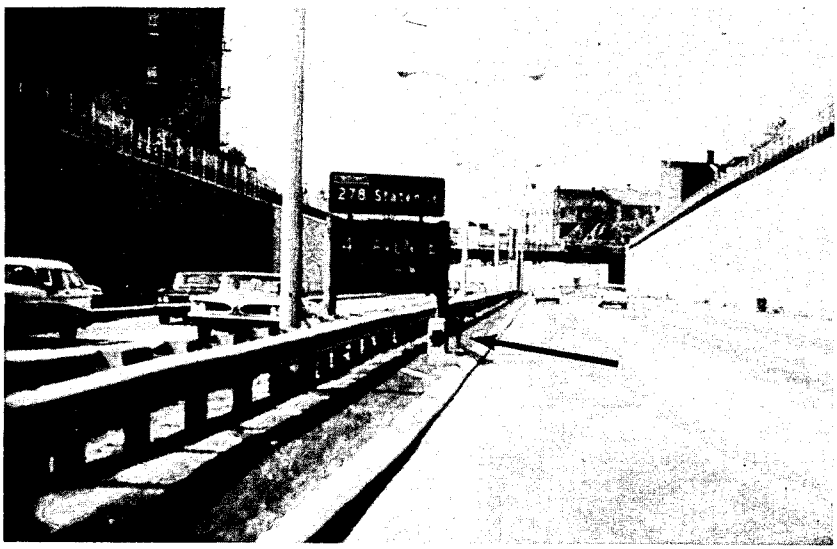
Mr. W. MAY. I notice the first slide up there, Mr. Linko. What is that?

Mr. LINKO. Well, about 4 years ago I noticed everybody was talking about highway safety, then I became aware of the conditions in the roads in my area.

There used to be a sign here. About 2 years ago somebody hit it, and to this very day those concrete stanchions (circled) are sticking out. Anyone that rides over that area may cut his tire or damage his automobile. I noticed these conditions and recorded them. This has been like this for 2 years.

This picture was taken during the summertime. I had to actually cut the grass away in order to take the picture of that. Anyone riding over the same area would not even know the concrete stanchions exist, so they may ride over them and be surprised when the car throws them—maybe they would hit another car—for no good reason. Maintenance people might come by 50 times during the summer here and cut the grass and always go around this thing. Nobody even thinks of removing it.

It might seem like a small thing, but that is a concrete stanchion, and if you run over that thing, you would blow out your tire or it would catch the inside of your tire, bend your tie rod or cut your brake linings. I cannot understand why this has not been moved. This is a hazard on Interstate 95.



Here is another one, just about the same thing. This is supposed to be a partial shoulder for cars to use. These concrete stanchions (arrow) are to protect a sign, which is a wooden sign. It would be safe if you knocked the sign down. You might damage the car. The sign will go down anyway from what I note.

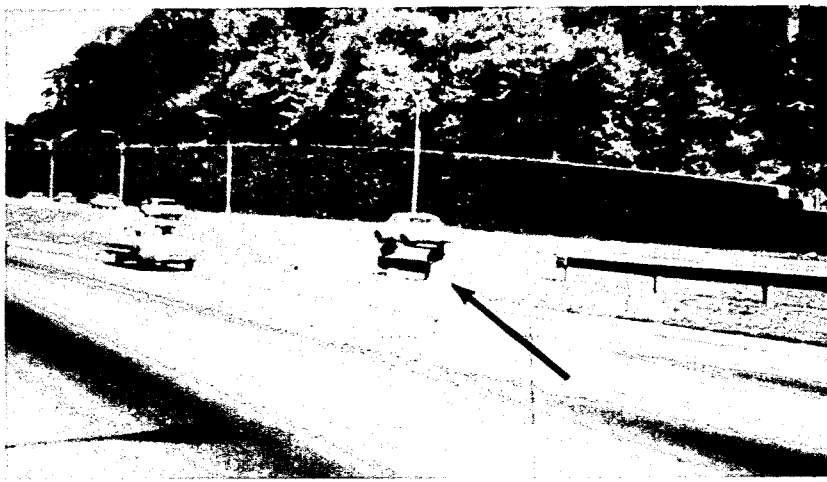
Mr. BLATNIK. Mr. Linko, not to direct you, but you said maintenance crews do come out here, for instance, and will cut the grass in the median strip and cut around these concrete stubs, leaving the grass near the stubs, enough so that the grass camouflages. Is that what you mean, the crews have known about it over the period of 2 years, that these stubs and other stubs were there?

Mr. LINKO. That is right. They have to go around them.

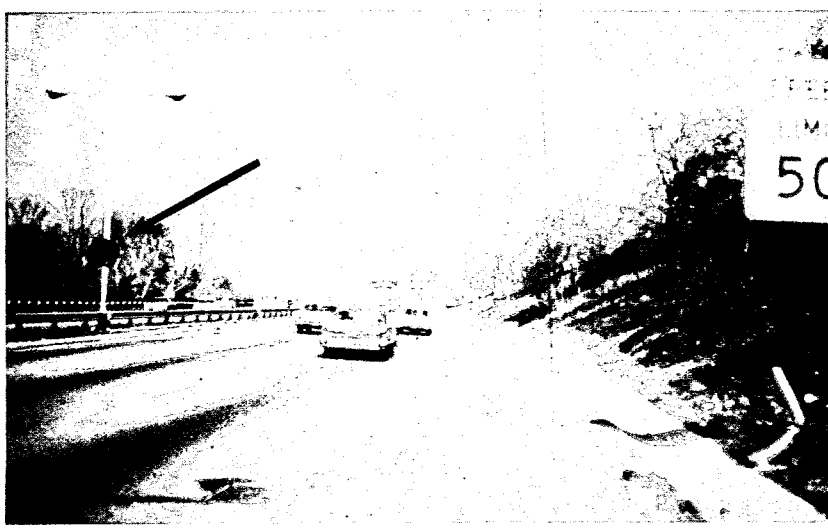
Mr. BLATNIK. You recognize they serve no purpose, which is obvious. But worse than that, that would not be so bad, but the bad thing is they are definitely very serious hazards to the rather steady stream of traffic going by, and nobody calls attention to any of the crews to remove them. Is that your point?

Mr. LINKO. That is my point. They pick up the papers and cut the grass, but they fail to remove the stanchions.

Mr. BLATNIK. They pick up the paper and cut the grass, but they leave these concrete barriers, spikes, standing there for over a 2-year period.



Mr. LINKO. That is right. This one (arrow) is doing nothing at all. If some small car runs into that, it can wipe out all the passengers in a split second.



I also know the roadside speed signs—I would like to recommend at this point on city highways, where we have very narrow medians, that these speed signs be put in the center on the light pole (arrow) where you see the red dot in this slide. If it was put there, they could be put back to back. You would not need any pole to hold it up. You could save a lot of money—and it would never be hit there, because you have the guardrail to protect it. Any way you look on the highway, you will see the right roadside is saturated.

And here you can see a speed sign in the center (arrow) that says "50 miles an hour"—we did it here. The reason they put the speed sign on the pole at this particular point is because they had no room on the right to put it. There is a wall there, and that is the only reason.

Mr. W. MAY. Notice the route sign, 95, the supports are outside the guardrail.

Mr. LINKO. Yes, sir, they are. For that reason these route signs also should be installed on the light pole. They are very small signs.

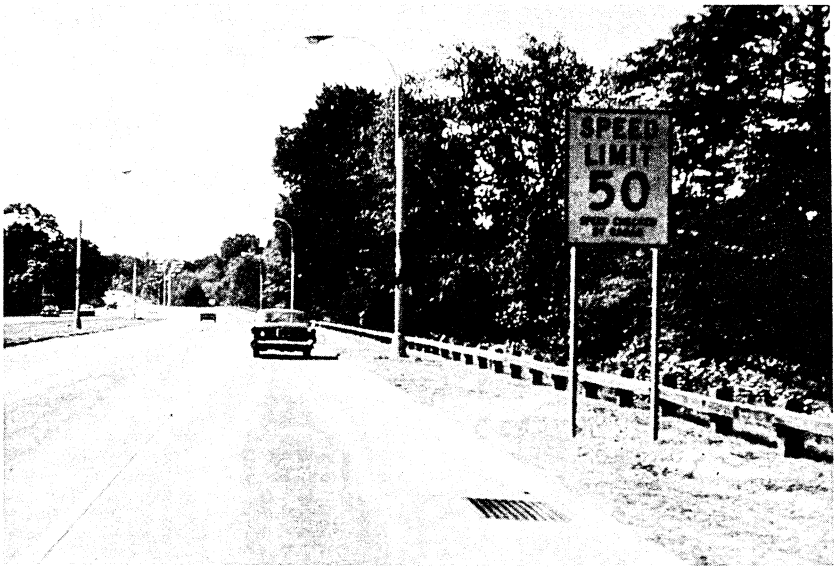
Furthermore, these signs should not be so close to each other like that. They are supposed to be 100 or 200 feet apart. The next light pole could be used for that one [indicating]. Instead they put these steel sign posts on the outside of the guardrail.

These are mistakes, because somebody can damage their car for no reason at all, and the sign would have to be maintained.

Mr. W. MAY. It represents a hazard and costs money?

Mr. LINKO. They have to constantly fix it. If they installed it on the light pole, it could not be damaged.

Here also you see a large sign, it says "55 miles an hour," and it is put on a 6-inch steel I-beam. Any medium sized car hitting this would be seriously damaged. If it is run into sideways, it has been known to cause the occupants of the car to be—well, let's say wiped out.



Here is the same type sign. It is being held up by aluminum poles, which are hollow. This can go down easily if struck, and yet it stands up during the strongest winds.

I would go further than this. I would put the sign on the light pole. We always manage to defeat the purpose of design.

Mr. W. MAY. Again we have spent extra money to create another hazard.

Mr. LINKO. That is right. Because you cut down the space between poles if you need to pull onto the shoulders; you need room to pull in. Here they are cutting down the space. They are saturating the roadside with unnecessary signs.

Mr. HOWARD. Mr. Linko, on that picture, is that a concrete base on the pole?

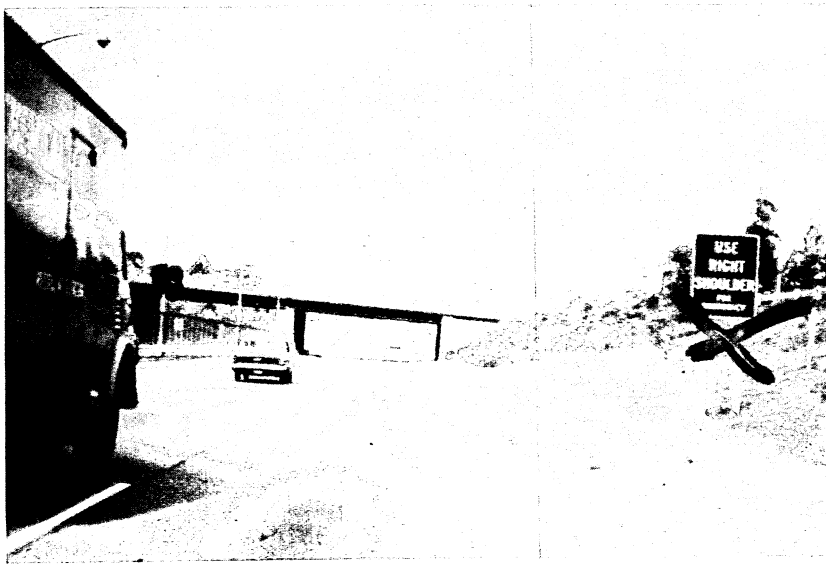
Mr. LINKO. On this one here? [Indicating.]

Mr. HOWARD. No, the light pole.

Mr. LINKO. No, that is not. This happens to be a good installation of a light. It is aluminum. I will get into what you are talking about. I do have some slides on it. It is a serious matter.

Here is another sign which I feel we should discontinue on the highway altogether. It says "Use right shoulder," and it is held up by the heavy steel I-beams. Actually, it's meant for the driver in the left lane. You see the truck there, it could block the view in the left lane. On the left actually you have a 2-foot shoulder and nobody can really use that shoulder anyway. There is no sense in putting a sign that says "Use right shoulder" because nobody could use the left anyway. And yet there are hundreds of these signs scattered on our highways, and I feel they should be moved, because they are causing a hazard, and are not serving any real purpose. If they had to be put anywhere,

put them on a light pole. You see the red dot in the center barrier? It would not cost any money for a sign post then.



Here you see a route sign. Now, one on either side, which calls for four separate poles, 2½-inch angle irons. In the background is a light pole (arrow) right behind that sign. The signs should be on that pole and could be installed back to back. You would save four poles and there would never be any maintenance.

This is what we have on this particular Interstate highway. It is saturated on the left and on the right.

Here is the same sign mounted on the right on a pole, eliminating all maintenance and putting it in a more favorable position, a little higher, and at no extra cost.

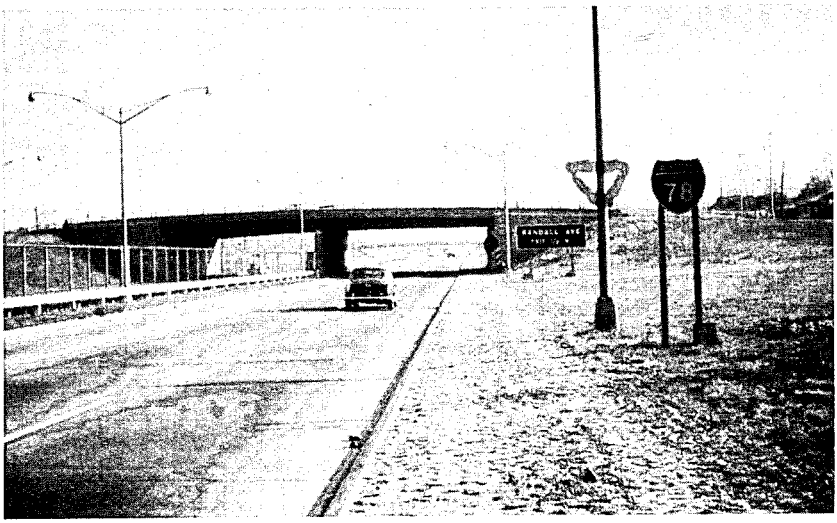
Mr. W. MAY. Mr. Linko, to go back one (fig. 1–009) at one time there was another sign on the left pointing toward the oncoming traffic?

Mr. LINKO. Yes. One on the right and one on the left.

Mr. W. MAY. Both have been hit?

Mr. LINKO. Yes. If that had been on the light pole in the background, it would take these right out of the shoulder altogether, and there would be no maintenance at all, and it would have saved a fortune of money in the original installation.

Now, these are not small poles. They may look small; they are 2½-by 3-inch angle irons. If you hit them, you may get into serious trouble.



Mr. BLATNIK. Not to interrupt your orderly presentation, Mr. Linko—Mr. Prisk, I ask you at this point, what would be the reason for two vertical posts, the light post and the two supports for the Interstate 78 sign we see here? What would be the reason for these being two separate installations so close to each other?

Mr. PRISK. Mr. Chairman, I think it is reasonable conjecture that the lighting installation was planned by one engineer, a responsible specialist in the lighting field. The sign installation was planned by a specialist in the traffic signing field, and these two were not properly brought together, these two interests, so as to serve the total purpose, in this instance with one pole.

Mr. BLATNIK. Two different departments acting independently putting up two different sets of installations on a roadside, is that right?

Mr. PRISK. This would be my conjecture.

Mr. BLATNIK. Would there be any other sections involved? Would it be one section dealing with the speed limit or any informational signs that do not come under Highway 78?

Mr. PRISK. I think you would find all of the signs would be coordinated and presented in a reasonably consistent way along the section of highway; but the lighting very often is handled by a specialist group and it is quite possible that in this instance, this example Mr. Linko has cited, would be accounted for by two different groups dealing with this part of the highway development.

Mr. BLATNIK. Thank you. Go ahead, Mr. Linko.

Mr. LINKO. Yes. I would like to also point out here that on this particular occasion, you can eliminate everything on the right-hand side, even the lighting poles themselves. They all should have been put inside the center divider, leaving the right side clear completely.

If you look farther up, which is hard to see, the bridge abutment is not protected either.

On all of our Interstate highways, we have to go back and install guardrails at these bridge abutments. These are 60-mile-an-hour highways, and anyone getting pushed off the shoulder, anyone who gets a flat tire has no protection against the bridge abutment.

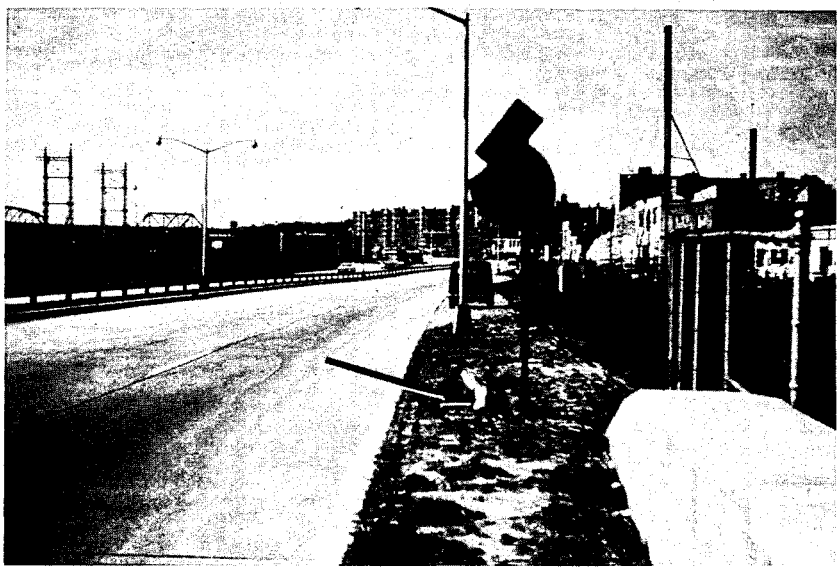
We are spending millions of dollars without installing guardrails. It will cost more when we have to go back and do the job over again.

It is more serious on these highways, because these are higher speed highways than the older highways.

I do not think we should allow the highway to open unless it is finished completely; because in the past, I have been talking to people about this, and they gave me many reasons why the highways should be open even though they are not finished, and taking everything into consideration that was told to me and, looking around and seeing what immediately happens, I feel the highway should stay closed. Even if it inconveniences some people, at least the job will be done right once and for all. Just recently this highway was opened up and they still have no protection at these bridge abutments. This calls for better coordination of all the parties involved.

This may be off the subject, but here is another sign that shows you that just by moving it 2 feet over to the right, behind the wall, it would be impossible to hit it, but here it is on the right-hand shoulder.

It could have been installed on the light pole. And you can see the light pole does not belong there either; it belongs inside the center of the median rail.



Mr. BLATNIK. What would be the solution, you say? The light post should be to the right behind the fence and the directional sign "No. 278 Interstate West," should be on the lamp post?

Mr. LINKO. Yes; in this particular case it could be. But I would even remove the light pole completely if I were doing the job. I would put it inside the center divider as you see the other light pole.

We fail to keep the right shoulder clear. If we have some lights in the center, why not have them all there and give the guy a break?

Mr. BLATNIK. You would have no lights on the right shoulder side of the highway? You would have them all in the center wherever possible?

Mr. LINKO. I would suggest, if you have some in there, why not put them all in there? They would be protected with the original guardrails you see there, and anyone riding in this area would not have to constantly knock these things down. These are knocked down by the thousands. They cost money to maintain them. And sometimes they fall on cars and it can cause an accident and even kill people.

Mr. W. MAY. Mr. Prisk, is it possible to install the lighting in the median and light that three-lane roadway?

Mr. PRISK. I think it might be worth saying a word here, Mr. May, in response to that. In order to get proper lighting on a highway, it is important that the driver see a road surface uniformly illuminated, and it is the purpose, in this particular installation I am sure, to have part of the lighting supplied from the median side and the other part supplied from the road margin, as you see. The poles are staggered, part of them on the side and part of them offset in the median installation.

It would not be possible to provide all of the lighting from the median without a somewhat different design, possibly a somewhat considerably more expensive design. I think the final answers for lighting roadways as wide as the one you see here from the median side has not yet been found.

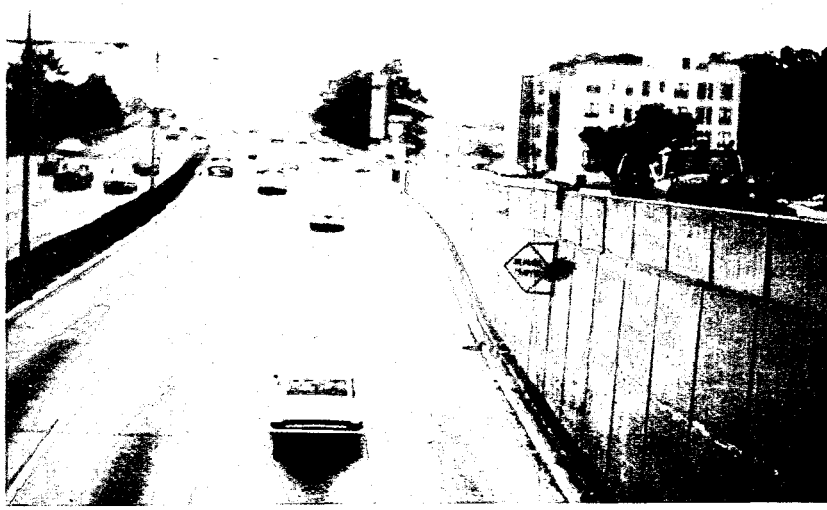
There is some work leading you to believe that we might go higher in mounting luminares so as to cover situations of this sort; but simply attempting to light everything from the median side is not always a satisfactory solution.

Mr. W. MAY. Mr. Linko, you had another point. That sign support, the sign 278, could have been located behind that concrete bridge parapet on the right?

Mr. LINKO. Yes, behind the concrete wall. They always seem to put it someplace where somebody is going to hit it. It could be put behind that, or on the light pole, or in the center divider, putting them back to back. It would save on installation and constant maintenance.

Here also you see another sign, 2½ by 3-inch angle irons, saturating the shoulder.

Here you see the same sign mounted on the wall. Now, the reason this is mounted on the wall is because there is no room to put it on the ground. I feel if you can get something off the shoulder area, it should be mounted on the wall.



Mr. CRAMER. Mr. Chairman, may I ask a question of Mr. Prisk? Mr. Prisk, here is a highway that appears to be lighted from the median. It is four lanes wide. Is that consistent with your previous comment with regard to the other slide (fig. 1–012) which is three lanes wide, which had lights on both sides of the street?

They have apparently found a way of lighting a four-lane highway.

Mr. PRISK. Congressman Cramer, I think in response to that, I should say that I did not mean that it was impossible to light it from the median; but on the design that we had looked at before, the design of the glasswork in the luminare was intended to cover a portion of the roadway and the design of the installations at the roadside was designed to cover the balance of it, so as to provide a well-lighted installation.

I am not saying that you cannot do it from the median with a properly designed system. Evidently this is a different design here.

Mr. CRAMER. Different designed highway system or different designed lighting of the system, which?

Mr. PRISK. Yes, the lighting. There are four basic types of luminares that give different light distributions, and evidently this particular slide we are looking at provides more lateral distribution than the luminare we had seen previously.

Mr. CRAMER. In other words, the light bulb is higher and apparently with greater intensity, is that it? So that it will light a broader space?

Mr. PRISK. Yes, sir; that is entirely possible.

Mr. CRAMER. Do you have requirements of any kind for lighting in your Bureau of Public Roads directives?

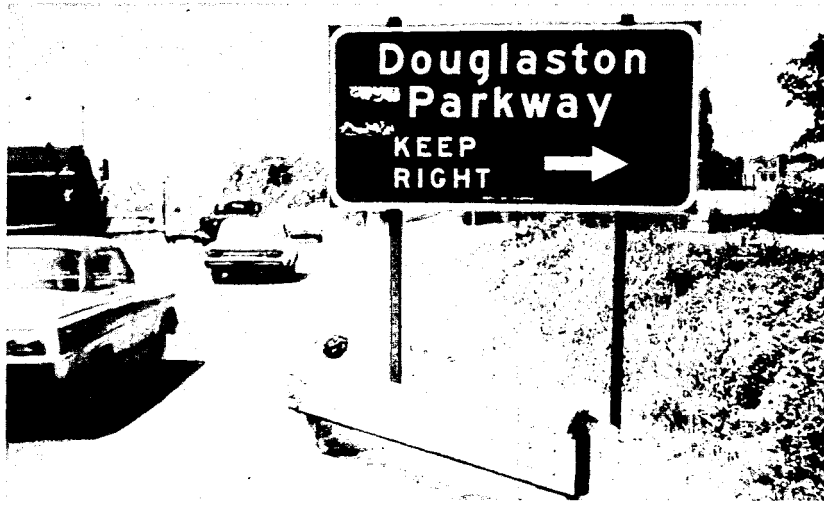
Mr. PRISK. We follow the standards that are set forth by the Illuminating Engineering Society and the American Association of State Highway Officials. These are guides in determining the lighting requirements on each highway. These are the ones we have accepted at Public Roads.

Mr. CRAMER. In other words, you would accept either one, this lighting for this highway or the other lighting for the other highway?

Mr. PRISK. Depending on an analysis of the situation; yes, sir.

Mr. BLATNIK. Mr. Linko.

Mr. LINKO. Here also you see an easy knockdown sign in the shoulde area, which could have been put to the right a little bit to give u of the full shoulder—but I am not complaining about this sign, becaus this happens to be a good sign compared to this.



This is the same kind of sign with 12-inch concrete stanchions o either side protecting it. Anyone hitting this will severely damag his car. If he hits it at the proper angle, he will be thrown righ back into the traffic and maybe cause another serious accident.

This particular sign is the same one you have just seen (fig. 1–015). Now, no damage was done to the car at all, because this sign di not have the concrete stanchions in front of it.

Mr. BLATNIK. Mr. Linko, would you stop right here again?

May I ask, Mr. Prisk, as I understand, the guardrails or barricades of this type are to minimize or reduce the degree of damage or degree of injury; in short, to protect the motorists—is that correct—from going over the embankment or striking some fixed object on the other side of the guardrail?

Mr. PRISK. That is correct.

Mr. BLATNIK. In this case the guardrail becomes a hazard itself in attempting to protect the sign. Inadvertently, I am sure not intentionally, little thought was given to what it might do to the driver of the vehicle. Is that correct?

Mr. PRISK. I think that is a reasonably correct statement, Mr. Blatnik. I would think it would be best to realize at the outset that any guardrail installation—and I repeat, any guardrail installation—can be a hazard of itself. It may serve enough good purposes so as to overbalance the disadvantage of having it installed. But the guardrail installations have sometimes been put in without significant thought as to the disadvantages. This is one.

Mr. LINKO. Well, this is one of the reasons I started my program, to remove unnecessary highway hazards. Now these are saturated on the highways. This happens to be the Long Island Expressway, which handles maybe 100,000 cars a day. All you have to do is make a little mistake, have a flat tire, or have somebody push you into this. That road has a usable shoulder. You can get into a serious accident for no good reason. The guardrail serves no purpose at all. And nobody wants to remove these hazards. Now, it would be different if it had a purpose, but it does not have a purpose. You can see this sign is the same type of sign as the other sign and has not got the concrete stanchions.

Mr. CLEVELAND. Mr. Chairman, may I ask the witness a question?

Mr. BLATNIK. Mr. Cleveland.

Mr. CLEVELAND. Have you ever given any consideration to another problem, which we have particularly in my part of the country, New Hampshire, as to what this does to snow removal?

Has anybody on the staff or anybody made any inquiries into that phase of it? I would think that if a plow would hit that it would not do the plow any good.

Mr. W. MAY. Very true, Mr. Congressman. These represent a real difficulty to maintenance people when it comes to snow removal. They have a great problem. Do you have something to say on that, Mr. Linko?

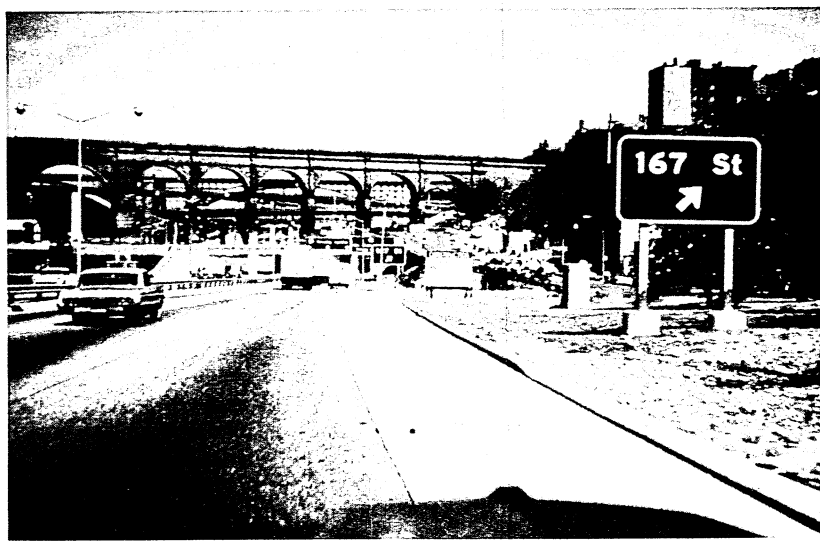
Mr. LINKO. Maybe that is how some may have gotten damaged. But this is more of a hazard than before, because now in this country we have millions of small cars. A large car might be able to smash that and just damage the car but now with the small cars on the road, it will wipe out all the passengers if hit in a certain way.

At the angle this rail is installed, it could throw the cars right into the traffic stream and maybe cause a three- or four-car accident. It is really serving no useful purpose at all.

I feel that we need a program to remove at least the unnecessary hazards, the ones that are doing nothing at all, and this is one of them. Now, with some of these there are heavy, 6-inch I-beams holding up the signs, and if you remove the concrete barrier rail, it might pose a problem. Here, this is not the case because the sign supports are light.

Our highways are saturated with this type and all other types o hazards. This is why I am here, to point these things out. Everyone i talking about highway safety, but how could we have highway safet when we have these lying around and nobody is doing anything abou them?

Here are two views of another type of sign, "167 Street," notice th two concrete pillars.



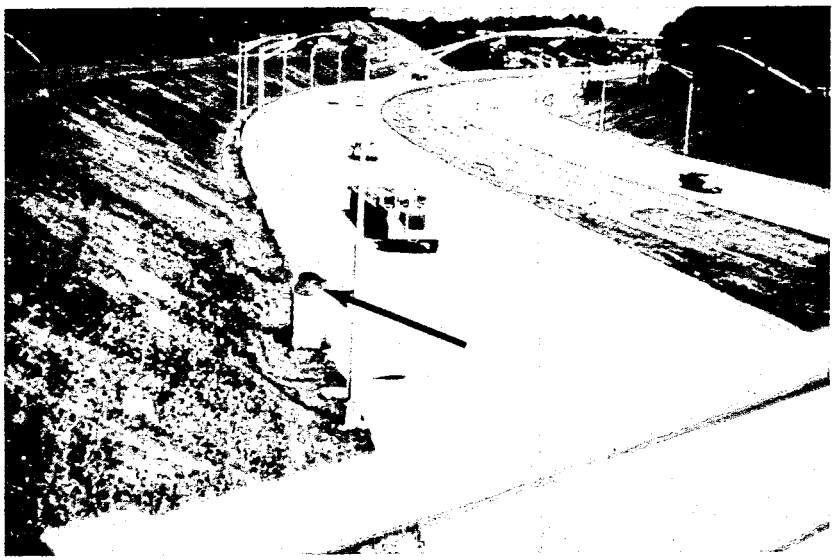
These should be signs that go down easy and with a thin pole and n concrete bases. If a fellow makes a mistake, then let him knock dov the sign, instead of wiping out all his passengers and damaging hi car.

Here you see a parking sign. This is a 50-mile-an-hour highway, both lanes, and you have a parking sign right in the middle. They have maybe a 25-car parking place where you can look over the water at La Guardia field. Because of that, they put this parking sign with concrete pillars there. I feel we should not allow these types of signs on the highway. This does not serve any particular purpose, as far as safety is concerned. There is another sign like this to the left, and if you run into that, you stop dead. These are not protected. This area is saturated.

I feel we should have rules and regulations of what can be installed. This more than likely is in the highway right-of-way. It is not protected and anybody can put anything they want on the highway, believe it or not.

I feel that we should draw up some standards, brand new standards, because the ones they are using today, nobody is paying any attention to them. First of all, anyone that wants to install anything on the right-of-way of the highway should go through channels. For instance, if you have a bridge abutment and they want to install a sign about 100 feet away, they are allowed to put it there. If they want to saturate a clear shoulder area, they do so. Such practices should be discouraged. Just because a sign says "1 mile away", it could be moved up a 100 feet and put in an area where a hazard already exists.

Here you see a transformer, which is right at the edge of the shoulder. This is a brand new highway just opened up in Staten Island. This could be put underneath the bridge I was standing on, and it would not cost any more money. The guy would have a second chance if he ran into that area.



Here you see another transformer that is behind the guardrail. However, you can see that same type of guardrail installation underneath the bridge where it has not been carried through and the piers protected.

Mr. BLATNIK. Mr. Linko, would you stop right here? You show a transformer in each of these two slides. Are these anywhere near the same stretch? Would this be under the same highway department or are they two different States?

Mr. LINKO. This is in New York State and on the same highway.

Mr. BLATNIK. New York State.

Mr. LINKO. There is another one here—here you see another one. This whole highway is saturated with this type of installation.

Here you have it on the right. In fact, you have three separate hazards here.

Mr. BLATNIK. May I ask, Mr. Prisk, here we have the same highway department, the same installation of the electrical transformer near a bridge. Each of these three are located at a different spot. One is right in line with the light pole along the edge of the highway; the other one directly behind the protecting guardrail near the bridge; and the third is off, not quite along, the shoulder; yet not as far back into the slope as it should be to be safe. Why the disparity in location?

Mr. PRISK. I think that the only honest answer I can give to that question, Mr. Chairman, is that there is failure to recognize that transformer box structure as a potential hazard. And not recognizing it as a potential hazard, these transformer boxes, or installations, were probably made on the determinations of electrical engineers and lighting engineers on the basis of the circuitry. They run so many hundreds of feet, so many thousands of feet, and put in a transformer, or so many pole installations and drop a transformer in. And they come more or less by chance on the highway on the basis of that type of reasoning.

Mr. BLATNIK. Here we have three possible points of impact, the concrete block housing the transformer to the right, the sign post for the sign, and the guard rail. Then beyond it we have the bridge support, vertical support.

Mr. Linko, your point here was you could reduce these three to one and that would cut your chances of impact to one-third giving you two-thirds times better chance of missing an off-the-road collision. What you say is, move the concrete transformer behind the bridge, then you would have only one hazard, and place the sign on the overhead bridge?

Mr. LINKO. That is right. I feel there should be one hazard here. This happens to be an Interstate highway and a large truck running into that light switch box can cause thousands of dollars of damage. It would have to be replaced and the same goes for that sign. If it had been mounted on the existing bridge it might have saved thousands of dollars in the initial installation. And actually you need a guardrail at the bridge abutment, and there is none, as you can see. That should be the only hazard here, and instead there are three separate points for impact.

In other words, nobody is really thinking of reducing the hazards; they are just continuing building them.

Mr. CRAMER. Mr. Chairman.

Mr. BLATNIK. The gentleman from Florida, Mr. Cramer.

Mr. CRAMER. When I was a kid we used to play the game called "What is wrong with the picture?" It looks like that is what we are into here.

Mr. Prisk, if I were suggesting what was wrong with this picture, I would say, No. 1, the transformer is on the right-of-way, constituting a hazard; No. 2, the sign has been placed on a separate standard, rather than the bridge, which provides a separate hazard; No. 3, the white and black striped post is a separate hazard; No. 4, the guardrail itself at the red spot is a hazard in that it is not in any way grounded or installed in any way to prevent serious accident; and in addition, No. 5, the stanchions supporting the bridge, or the pillars themselves, have no protection and are pretty close to the traveled lanes. Now, that provides five separate specific hazards.

Now, how can anyone possibly suggest that this design was made with safety in mind?

Mr. PRISK. This is a very good question, and you have made a good identification of the hazards that are there. I believe that the improvements that you suggested are not unreasonable ones, in most part.

That black and white board is simply a marker board up against the side pier. I doubt that this could be considered to be any kind of hazard. In fact, it probably contributes to safety at night, because those boards are reflectorized and show the motorist where the side pier is.

Mr. CRAMER. Substitute the light pole I did not mention—it is also in the picture—for the painted striped pillar.

Mr. PRISK. I wondered if you had overlooked that light pole. [Laughter.] I do not think of a good answer to your question.

Mr. CRAMER. How can we today, with the engineering capabilities that we have and with the Bureau's experience over many years, and with the State highway department's experience likewise, end up with five separate hazards in one location like this? That is what I want to know.

Mr. PRISK. There is no good answer for it that I can think of. These separate hazards looked at separately would be recognizable as hazards

in any highway engineer's mind today. But they are put in over a span of time. It is quite possible this lighting might not have been installed at the same time the highway was built, and as things are added on, very often hazards are integrated into a facility without the overview evaluation of knowledge of the highway authority. So you ask how can this happen? I say it can only happen by lack of consideration of these separate elements for what they are, in terms of potential hazards.

Mr. CRAMER. As I understand, then, your testimony is to the effect you have separate planners for separate functions, and they just do not get together. In other words, you have planners for lighting, planners for signs, planners for bridges, planners for roadside parking, planners for use of right-of-way, for use of other than highway purposes, such as transformers—is that right—in the State highway department?

Mr. PRISK. This is what I would say is largely responsible for situations of this sort.

Mr. CRAMER. Let me ask one more question. We passed last year the Federal-Aid Highway Act of 1966. Prior thereto in 1965, we passed the Baldwin amendment, providing for studies and research in the subject of highway safety. In 1966, we passed the Highway Safety Act which required that standards be established relating to highway safety programs.

What is being done under that to prevent a recurrence—you already have the statutes on the books—to prevent a recurrence of such an example as this?

Mr. PRISK. Well, the Highway Safety Act is being administered by the National Highway Safety Bureau, as I am sure you know, and the standards that are being prepared there have not been put into final form yet. So just precisely what they will say about this kind of situation is impossible for me to state now.

I can say that from an overview of situations like this, conducted jointly during the last 6 or 8 months by the Bureau of Public Roads and the State highway departments, that these kinds of hazards have been identified. It is now the expressed policy of both the American Association of State Highway Officials and of the Bureau of Public Roads that these are to be eliminated from all future construction and are to be removed from existing construction as the programs progress.

Mr. CRAMER. In the past, safety matters have been under you; is that correct? Under the Office of Traffic Operations, Bureau of Public Roads? Is that the new title?

Mr. PRISK. That is the new title. I am second in command.

Mr. CRAMER. What was your old title?

Mr. PRISK. Deputy Director of the Office of Highway Safety.

Mr. CRAMER. So you were the safety authority prior to the reorganization, is that right?

Mr. PRISK. Right.

Mr. CRAMER. Now, under the reorganization, who is going to be in charge?

Mr. PRISK. This is a question I think I must pass on. The Federal Highway Administration has, of course, been established within the Department of Transportation. The respective responsibilities of the Bureau of Public Roads, the National Highway Safety Bureau, and

the National Traffic Safety Bureau are in the process now of being finally defined. I have been serving with this committee pretty much in the period that this has been taking place.

Mr. CRAMER. Well, Mr. Chairman, I intend to pursue this matter as these hearings go on, and I hope we will have witnesses available to give us adequate explanation.

Mr. BLATNIK. Yes, we look forward to it. We hope for the time being, as the problem here is presented for the record, we feel it is essential we do get into the area of questions the gentleman is now indicating.

Mr. CRAMER. I would like to outline for the record what my concern is. There has been a reorganization under the Department of Transportation Act passed last session. I have previously expressed myself as being quite concerned about it, because in my opinion it downgrades the Bureau of Public Roads in its historical function. I think this safety discussion is going to be a pretty interesting area for showing what is being done. In particular, I want to inquire about the function of the National Highway Safety Bureau, established outside of the Bureau of Public Roads as a separate agency under Mr. Bridwell, the new Federal Highway Administrator.

I am going to pursue the subject matter of "so where do we end up" as it relates to redtape, decisionmaking, duplication of effort, and function of the Bureau of Public Roads as compared to function of these newly reorganized people.

As an example, in regard to my question about draft standards now in existence, which Mr. Prisk indicated he could not necessarily testify to, I have in my hand the memorandum of February 16, 1967, issued by this new National Highway Safety Bureau, under Dr. Haddon, who I personally would not necessarily characterize as an authority on highway safety. In this memorandum it is suggested that the standards for geometric design to be used in the future, at least for the time being, are "A Policy on Geometric Design of Rural Highways," and "A Policy on Arterial Highways in Urban Areas," both adopted by the American Association of State Highway Officials. And I just ask you this question, which I am sure you can answer, Mr. Prisk; that is, are those not the very standards under which these highways were constructed?

Mr. PRISK. That is correct.

Mr. CRAMER. So we are really getting nowhere at the moment in regard to better standards under either the reorganization or the Highway Safety Act, and in the Safety Act we instructed the Secretary of Commerce, now the Secretary of Transportation, to provide adequate standards for safety purposes. I hope we will have proper witnesses to get further into that matter later, Mr. Chairman.

Mr. CLEVELAND. Mr. Chairman, may I ask one question?

Mr. BLATNIK. Mr. Cleveland.

Mr. CLEVELAND. With this picture right before us, one of the hazards that picture reveals is the piers holding up the bridge on the right.

Now, I assume that bridge could have been designed so that there would be no piers there at all, and I further assume that this means the design may have had to be changed. This raises the question of cost. We know that the highway trust fund is not exactly great. Is there anybody here, either on the staff or as witnesses, who can tell us how

much more expensive it would be if the supporting piers on the right were eliminated? Can you answer that?

Mr. BLATNIK. Mr. Prisk.

Mr. PRISK. Estimates have been made on recent construction for situations like this and the cost of moving that side pier completely out of the picture would run in the nature of 10 to 20 percent increase in the cost of that span. In some shorter spans there was no——

Mr. CLEVELAND. Excuse me just a minute. You are making this unclear to me.

I am not talking about the cost of taking those piers out; I am talking about the original cost of having designed that bridge so those piers never would have been put in in the first place. It must have cost something to put those piers in.

Mr. PRISK. This is the same thing I am talking about. I am sorry to be unclear. If this bridge had been built without the side piers in it, it could have cost in the neighborhood of 10 to 20 percent more than it did cost. Does that answer your question?

Mr. CLEVELAND. Thank you.

Mr. MCCARTHY. Mr. Chairman.

Mr. BLATNIK. May I make one comment, then I will recognize the gentleman from New York. Of course, there is limitation as to how long a span can be?

Mr. PRISK. Yes.

Mr. BLATNIK. There is a point of no return, at which point you have to have supporting piers as you have here.

Even at that, would not a guardrail or some other protective device around the piers be very helpful, rather than having a head-on impact into a square or circular concrete structure? Would a guardrail be of any protection in this case?

Mr. PRISK. It would be my judgment that a guardrail for the side piers is desirable in this situation.

Mr. BLATNIK. One last comment about "what is wrong with this picture," the title given to this picture by the gentleman from Florida, Mr. Cramer, is that after your attention is called to these obstructions, these hazards, you really do not have to be an engineer or specialist in safety. An average citizen or an average motorist, when his attention is called to it, can find these things out for himself. The question is, How did this escape the attention of so many people in the highway department who are daily concentrating their efforts to all aspects f the highway program, which include safety and design features? It would not be lack of attention; is it lack of coordination?

Mr. PRISK. I think, as I attempted to suggest earlier with respect o the lighting, the separate concerns of bridge engineers against the oadway design engineers, traffic engineers, and others probably have ot been sufficiently coordinated. On the other hand, the relative ıazards they present are an area in which we do not have very much information.

You should not overlook the fact that little research is available today to quantify the relative hazards. This is why it appears to the ayman and to the engineer, too, as an apparent hazard. But we cannot attach a specific quantitative value to any one or more of these five or six items that have been identified in the picture. This, again, is another reason why things get overlooked.

Mr. BLATNIK. The gentleman from New York, Mr. McCarthy.

Mr. MCCARTHY. Thank you, Mr. Chairman.

This looks familiar. Is that Staten Island?

Mr. LINKO. Yes; this is the Staten Island Expressway.

Mr. MCCARTHY. Do you have information on fatal accidents at thi location?

Mr. LINKO. Well, it is hard for me to get. In New York City, a bi city, we do not even bother to put these accidents in the paper becaus there is so much going on, and nobody ever hears about these thing People die and they do not even bother to print this in the paper. Th particular picture is really a shame because these hazards are n necessary. It does not cost any more money to eliminate these. It woul cost less money if some of these hazards had been eliminated at th start. You already have one guardrail protecting the overhead sign That guardrail could have been put in front of the bridge abutmen

Mr. MCCARTHY. On the sign, I would like to ask Mr. Prisk, wha would you estimate the cost of those sign supports?

Mr. PRISK. This type of sign, "Bradley Avenue exit one-fourt mile," mounted on a mast arm, and in that type of location, I woul suggest that is in the range of $6,000 to $8,000.

Mr. MCCARTHY. $6,000 to $8,000. Just before I left private industr to come down here to Congress, the company I was with and othe companies were beginning to utilize certain concepts made by a famou Italian engineer—the name escapes me at the moment. Some of the vast, new, very interesting buildings have been erected with concret without supporting structures. Vast expansions of heavy cement struc ture without supporting pillars, so that it is conceivable—I mean it i feasible to construct that bridge without the median pillars, too.

Now, I am just wondering if any of these people have been usin the latest modern technology in building bridges without pillars. D you know of any?

Mr. PRISK. I would have to say, sir, that I am not a structural en gineer. To the best of my knowledge, the bridge engineers in the Stat highway departments are using advanced concepts of design an materials. They certainly spend a great deal of time in discussion o improvements of design.

On the extent to which this principle that you mentioned has be recognized, I am quite unable to comment.

Mr. MCCARTHY. Just for the record, Mr. D'Amico gave me th name, the gentleman I alluded to is Mr. Nervi, whose concepts hav been utilized. I believe Dulles Airport is one where they have thi vast expanse of heavy concrete without supporting pillars.

Mr. PRISK. Yes, sir. I think you must recognize, however, that ther are vehicle loads to be accommodated on that structure over a conside able span, and just what is going to hold that up, I do not know. Yo do not have any vehicle on top of the roof at Dulles Airport.

Mr. MCCARTHY. No, but you have a very wide expansive area, plu the weight of the material itself, plus the normal stress. I am not structural engineer, either, but I think that the idea has been sho that you can erect a structure without supporting members. My reco lection of it is that these can be made very strong with added reinforc ing steel. I am sure we would encounter some difficulties in view o the load of trucks and cars and so forth, but it seems to me it is wort

exploring the idea of erecting these without supporting pillars. You know of nobody who is at least experimenting with it?

Mr. PRISK. That is correct. But I again must qualify that reply by saying that I am not a structural engineer. I do not work actively on problems of the supporting of structures. As far as their function and their general configurations are concerned and their effect on traffic, this has been the subject of some study on my part.

As to what it would take to hold up a structure of this sort, I am not qualified. I might suggest that the committee may want to get a qualified bridge engineer to talk about this matter of center piers if you wish to discuss that.

Mr. MCCARTHY. One final point. There is money available for research on new concepts of highway safety; is that not correct?

Mr. PRISK. Yes, sir.

Mr. MCCARTHY. Under whose direction is this research conducted?

Mr. PRISK. There are funds available through the Federal-aid highway program for research such as you suggest.

Mr. MCCARTHY. By the States?

Mr. PRISK. By the States or by qualified investigators in the private domain.

Mr. MCCARTHY. So that the money is available. It just occurs to me that this would be an area worthy of research anyway. We have new concepts. Could they be utilized? When you think of how many persons have been killed by hitting those median pillars or the side pillars—and this is a major area where people have been killed—I would think this would be at least worth exploring.

Mr. BLATNIK. Could we get more information on that, Mr. Prisk? We would be interested in having more information on what is being done by way of research and what can be done.

I do not mean to interrupt the gentleman, but time is running out. I believe we have a question from Mr. McDonald, from Michigan.

Mr. MCDONALD. Mr. Prisk, when a highway is designed, I assume that we have engineers to design the concrete roadway portion and bridge engineers to design our bridges and lighting engineers and sign engineers, too.

Do we have any such people as safety engineers, for instance, to coordinate the efforts of all these other people and keeping in mind at all times the safety of the driver on the highway?

Mr. PRISK. Work that is done to bring together the interest of these several groups usually takes the form of a review team, which actually is composed of members of these groups that get together and discuss the overriding and interlocking requirements of each of their own responsibilities related to the final highway improvement.

Mr. MCDONALD. Mr. Prisk, do you think it would be a good idea to have an overall safety engineer on these projects to look at the highway only from the aspect of safety for the driver, and then to coordinate or help coordinate the activities of the other people involved in design?

Mr. PRISK. Mr. McDonald, I would like to agree with you that that function be performed. As to whether or not it would be performed through a person who perhaps serves as the assistant to the chief engineer or something of this sort, I do not know as I would care to comment. I think the function should be performed.

Mr. McDONALD. From what I have seen so far, from what we have seen before in our session, it would seem to me that this could be a whole field of its own, just safety engineering related to protecting the driver. I think that this one person should have authority in the final determination of how the highway is to be designed and constructed.

Mr. PRISK. I fully agree with your concept.

Mr. McDONALD. Thank you.

Mr. BLATNIK. Mr. Clausen.

Mr. CLAUSEN. Thank you, Mr. Chairman. Certainly I believe Mr. McDonald has demonstrated why I believe he will be a valuable addition to our committee. I think that he has touched on something that may well be a recommendation coming out of these hearings. Certainly some of the State engineering establishments, if I can use that term, may be just a part of the total operation within the State and thus may be somewhat inhibited. I would think this committee might take a good look at making a recommendation along the lines Mr. McDonald made, and I want to compliment him for it.

If I could ask the expert witness, the sign "Bradley Avenue," as it is located is suspended from the post. Is it feasible to place that particular sign on the bridge itself; and if you cannot, why not?

Mr. PRISK. This sign is of the type and of the dimension that I would believe it feasible to place it on the structure. There have been some unfavorable experiences with the use of signs on structures where there is vandalism or breaking of the luminaries that light the sign and things of this sort. And in this case, fences have had to be erected to prevent people, youngsters particularly, from getting at the sign. But in most circumstances with a sign of those proportions, it would be entirely practicable to mount it on the structure.

Mr. CLAUSEN. I can fully realize that they have to design a size of the sign keeping in mind the distance between the sign location and the actual turnoff point; but I would imagine that could be engineered in such a way so as to take care of the point of concern. Would you agree with this?

Mr. PRISK. Yes, sir. If this had to state "Exit ⅕ mile" instead of "¼", that is not critical.

Mr. CLAUSEN. Yes, sir. Now, the final question, the red dot to the far right, is that a transformer?

Mr. PRISK. Perhaps Mr. Linko would have better information than I on that; but I have seen these types of installations on highways, on Interstate highways, unfortunately, and this is a control box for the lighting circuit.

Mr. CLAUSEN. Well, again, would there be any reason why, for instance, that that particular control box could not have been placed on the bridge to serve the signs located on the bridge?

Mr. PRISK. The box probably controls the entire lighting on the highway, perhaps as much as a half mile either side of the box, up and down the highway.

It would seem to me that the most reasonable thing to do would be to move that box up the slope, or it could be put behind, possibly closer to the structure, on the far side so that it would be downstream from the structure and thereby enjoy the protection that is afforded by those side piers, as long as they stay in there. These are some possible solutions.

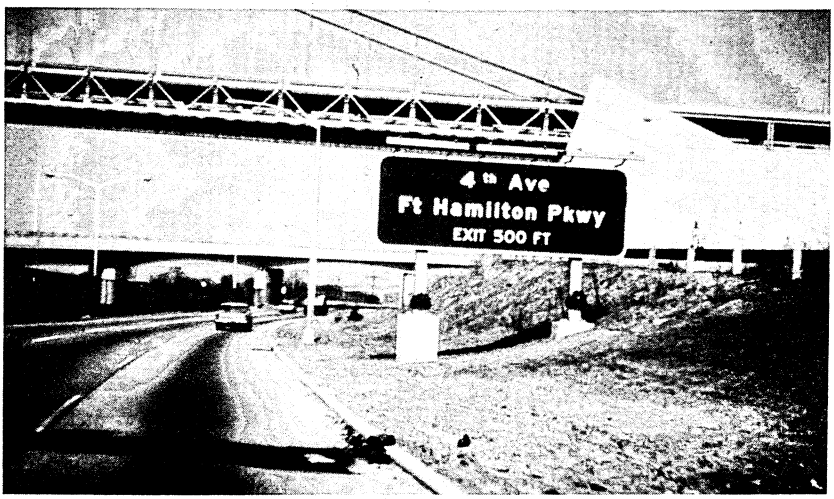
Mr. BLATNIK. Time is running out on us. Mr. Linko, would you proceed with your presentation?

Mr. LINKO. Yes. I better get going.

Here you see two concrete stanchions that must be 2½ feet in diameter and about 2 or 3 feet high, capable of wiping out any car. There is no good reason for the sign to be at this location. They put in a second hazard close to where one already exists—the roadsides are saturated with this type.

As you see, it says "one-half mile." A little further you see a natural hazard, a bridge abutment and embankment. I feel the better place to put this would be at the bridge. I cannot understand why they put it in here. If anyone hits that, he is finished.

Here is another one, right in the shoulder.
(Slide.)



Here is another. All they have to do is back this up to the point in the background there where you see the red marks, and this sign would be behind the guardrail or bridge rail. In that way this hazard would be eliminated, and it would give the guy a chance if he ran off the road in this area. Also, you can see here that the guardrail is too short.

This sign could be put at the bridge abutment. Also, at the bridge abutment you see a guardrail. Notice that guardrail turned in toward the shoulder area.

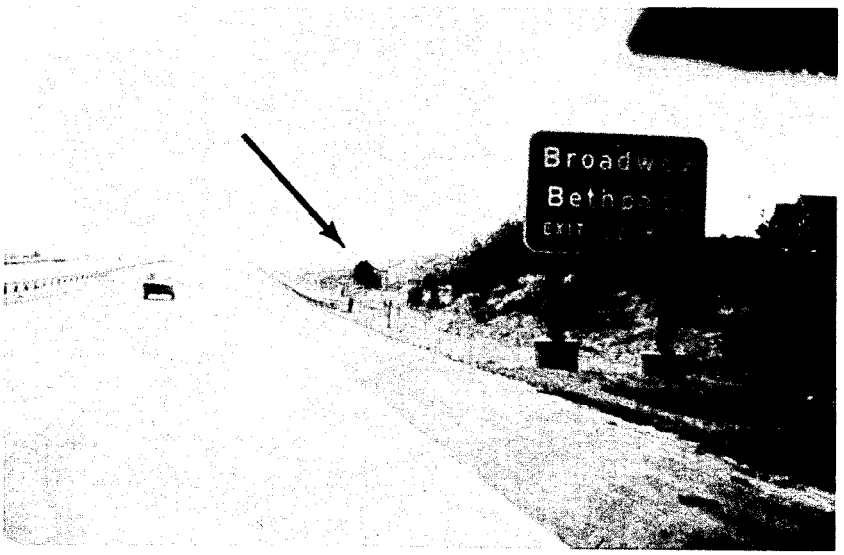
Mr. BLATNIK. I did not hear that last part. That guardrail is where?

Mr. LINKO. Actually the motorist has about 20 feet off the road to the right. Anybody riding along on this highway could actually run around that guardrail that is supposed to be protecting him, and smash into the bridge abutment.

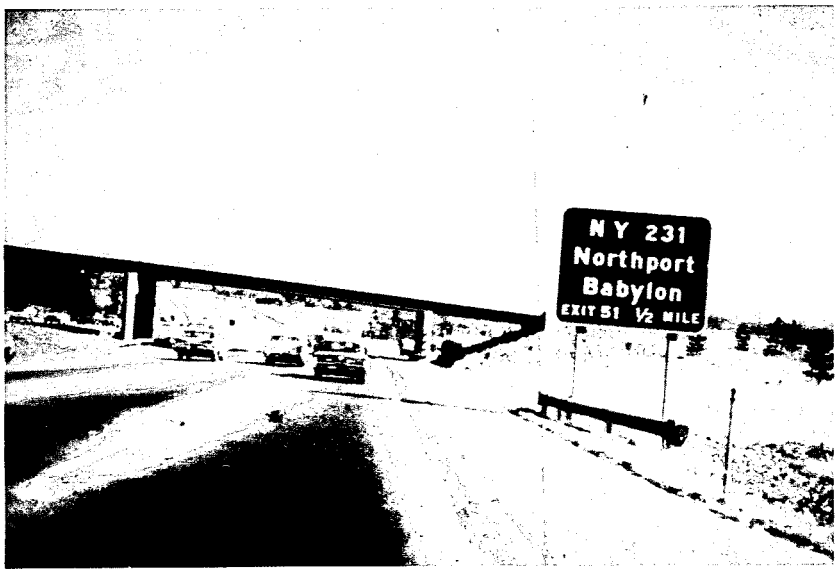
The purpose of the guardrail here is to protect cars from the bridge, and it is not even doing that. This is what I noticed all over the highways, extra hazards, which have got nothing to do with extra money at all. Actually, it costs more money to do it wrong.

You can see, this sign could have been attached to the bridge. Again it is unprotected.

Here is a half mile sign. Nobody is going to notice the difference if it is changed 40 to 50 feet. We could have completely done away with this hazard by putting it behind the existing guardrail (arrow).



Here also you could use a location where you have a hazard like that bridge above.



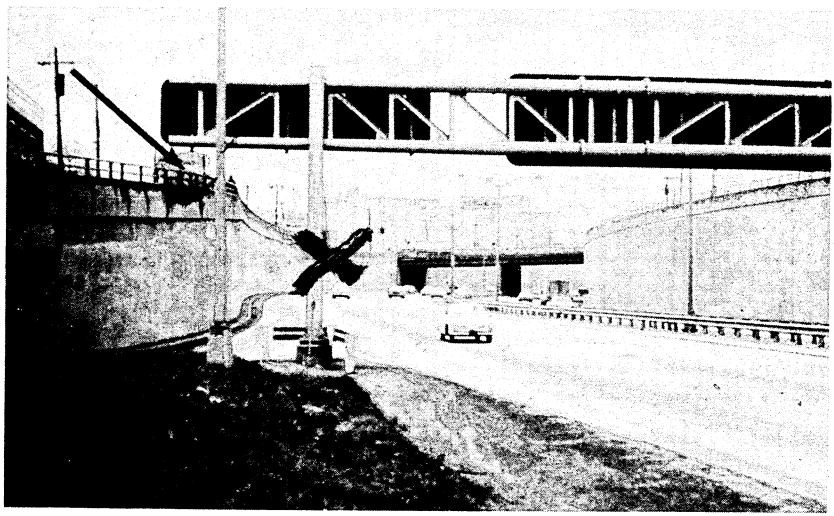
The ideal position could be in an area where you have a hazard already (arrow). Why create new hazards?

Here is a sign on Route 17, in New York State, and it says: "State police next right." You know that is not a critical sign. You could back it up where the dot is on your right (arrow) behind the rail and clear the area.

Like I say, the important thing is to make this area off limits and to make it hard for anyone to put signs here.

If they have to get through channels to get permission to put these signs here, they might look around and they might see that there is a guardrail here or a bridge abutment.

Here you can see you have an opportunity of putting that sign where the red dot is on the wall (arrow). They put this concrete stanchion in the gore which is the worst possible place. It would cost less to do the job right.



And here on the right you can see it would be very possible to put this sign stanchion on top of the wall or behind the wall, and clear this shoulder area.

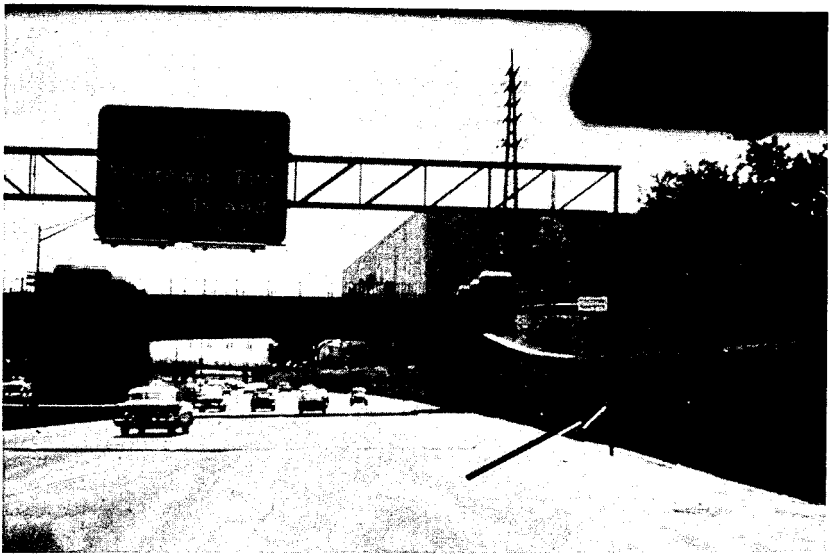
I want you to notice that 50-mile-an-hour sign, because in the next slide it will be down.

Mr. BLATNIK. Is this the same sign?

Mr. LINKO. This is before and after.

I took pictures in advance of about 150 places which later were hit, because I knew the installations were wrong and dangerous. I tried to bring this to the attention of officials but nobody would listen.

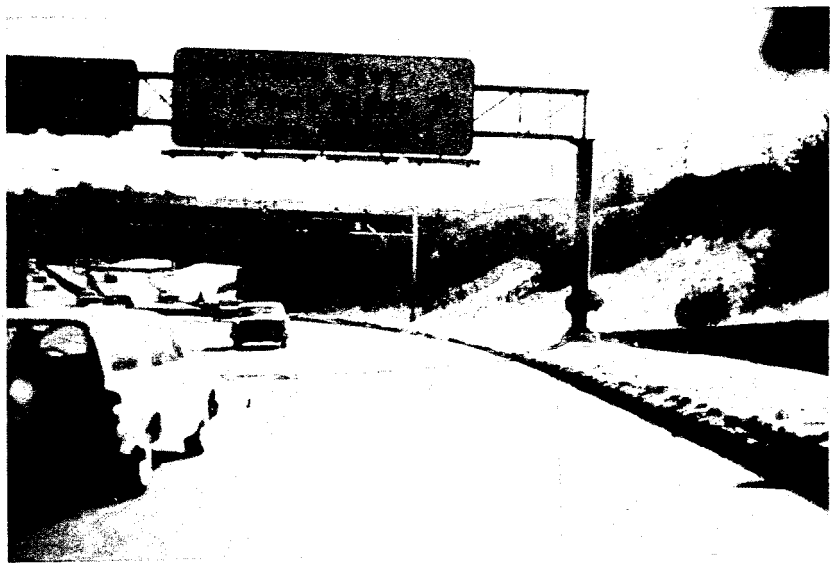
Here is the next installation on the same highway, about a half-mile back, showing how we can do the job. The sign stanchion is on top of the wall. The highway is not any wider, exactly the same conditions.



Here is another location at which an accident occurred. I had some data on it. Here also this sign stanchion could have been mounted behind the wall. Also, the guard rail is too short. This was taken prior to an accident. Because I felt this was bad, and that something would happen.

And you can see somebody smashed into this concrete base. Many accidents have occurred here. Notice that the guard rail is gone—it was hit and it went down. The guardrail has been damaged and removed at this particular location. It's been like this for over 2 years and nobody wants to take the responsibility for replacing it.

This is the same location. You see snow on the ground. There is still no guardrail.



And somebody had a serious accident. I do not know what happened to this driver.

Mr. BLATNIK. I am sorry to interrupt now. Was this picture related to the previous picture in any way?

Mr. LINKO. Yes; same location. This has been hit prior and the guardrail was never replaced.

Mr. BLATNIK. Is that the wall or a shadow at the right?

Mr. LINKO. It is a wall, a stone wall. This stanchion could have been put behind the wall, or on the stone wall like I showed before. It happens to be a usable shoulder area, and this is the place where a car most likely will run off the road. It is on the outside of the turn, and it was raining. Failing to replace the guardrail caused the unnecessary hazard to this person.

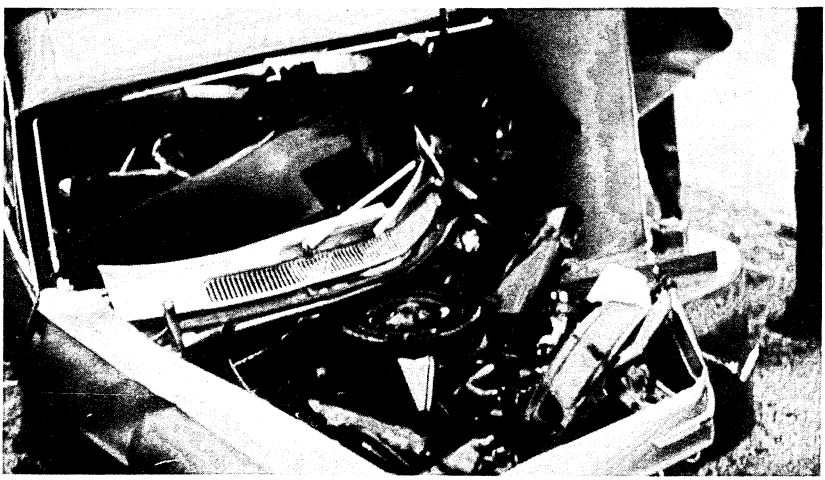
Mr. BLATNIK. What happened, do you recall, to the occupant of this vehicle?

Mr. LINKO. I did get his license plate number and I called the place where he works. They told me he did not work there any more, so I really do not know what happened to him.

Suppose you had been sitting where this driver was?

Mr. BLATNIK. Same pose, same vehicle, front view?

Mr. LINKO. Yes.



This is what happened. I feel this is really unnecessary because this pole could have been out of the shoulder area and on top of the wall.

This shows the terrific damage, unnecessary damage that is caused on your highways because of making simple mistakes.

Mr. CRAMER. It also indicates, does it not, that they made sure they put a post in there that an automobile could not destroy. It might destroy the automobile, but the automobile could not destroy it.

Mr. LINKO. That is right.

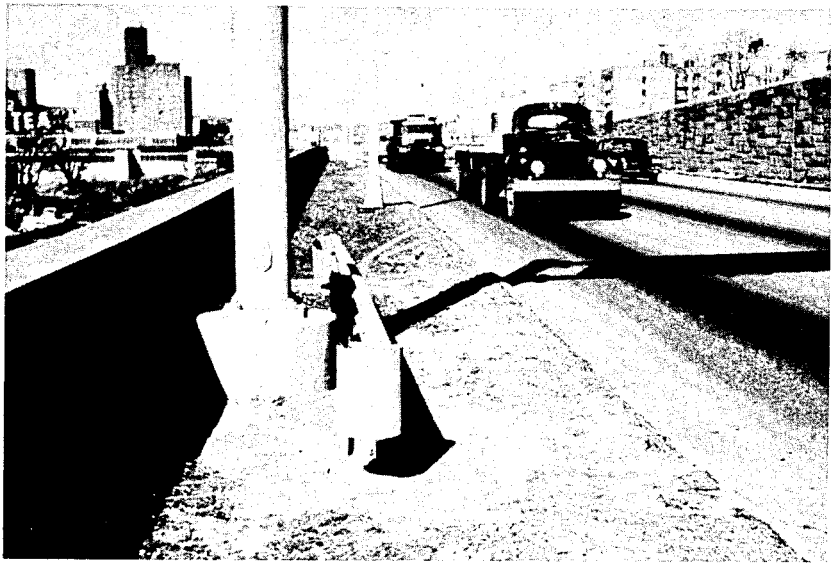
Mr. CRAMER. To support a sign.

Mr. LINKO. Sometime they might put up money to back these things up so it can be cleared from the shoulder. In this particular case, that is just a little stretch, about 3 or 4 feet. Why are they permitted to saturate the shoulders? If you have a shoulder area, these stanchions are supposed to be 2 feet off the shoulder area.

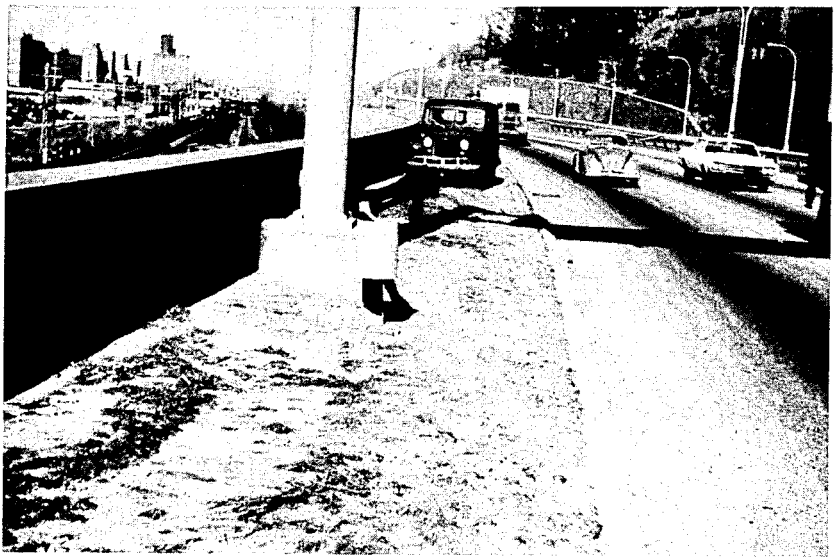
Mr. W. MAY. As I recall the sequence, the first picture was taken in 1965, and then in February of 1966 somebody had wiped out the guardrail, and the last accident happened about September of 1966?

Mr. LINKO. Yes. I have tried for 2½ years; they never even bother to replace them.

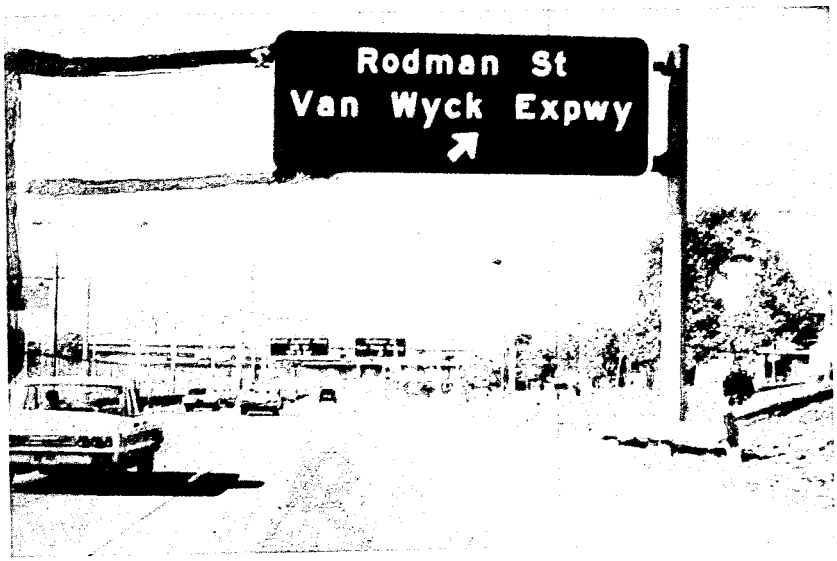
Here is another location. This is a shoulder area also. You can see that this guardrail is not installed to let you slide by, which could have been done. First let's get things straight. This sign does not belong in the shoulder area. But in case there was no other place to put it, it would be very easy to build it closer to the wall and phase it out with the proper guardrail of about 100 feet or 150 feet and taper it right into the wall. This guardrail is designed to lessen your impact not to prevent it, but to do that it must be installed right.



Here is another one. This one has been lucky. The guy did not hit it at the end.



Here you see one on the right. At this point I would like to suggest that many of our roadside shoulders on the right could be cleared completely. I feel that at no extra cost they could be put on the left inside the center rail. One of the reasons I suggest this is because most of these signs are trying to tell the two left lanes what to do. They are telling the two left lanes to get over to the right because your exit is coming. If we would put them in the center rail, it would completely remove the hazard on the right shoulder. For the life of me, I do not understand why they are saturating the right shoulder.



Here is another sign. You can see this one has been hit and the rail is down. If this was built properly inside the center rail, it would still be serving the same purpose and you would have a clear road to help somebody who made a mistake, instead of wiping them out. They would be able to get back on the road.

Mr. CRAMER. From these pictures, it looks as if the subject matter of the sign involves action on the right lane and the sign is on the right. Would that argue against placing those same signs in the center as he suggests? Any reason for having them on the right when the activity involved, the turnoff, and so forth, is on the right?

Mr. PRISK. No, there are no fixed requirements. This perhaps is catering to the traditional practice to place signs on the right of the roadway. If that is a limited width median, however, you could have difficulty accommodating that size base and concrete footing in the median. The windload on a sign of that size is the principal determining factor and poles cannot always be put on top of ordinary masonry walls. There has to be a substantial base to keep this size sign from being blown down.

Mr. CRAMER. How many miles an hour wind?

Mr. PRISK. Ranging up to 100 miles an hour, depending upon the sections of the country.

Mr. CRAMER. That is all.

Mr. LINKO. What I want to say at this point, I am really talking about city highways because that is where I came from, and 95 percent of the highways in my area have a very narrow median like this one [indicating]. In fact, more of the sign could be over the highway if you put it in the median than it would be if you have a full shoulder which this is not. In many places you have a full shoulder. And the sign really belongs on the left, the way I see it—I could be wrong—because you are trying to tell the drivers in the center lane and left lane to get over.

If you could remove the hazard completely, that is the point I am trying to say. I am trying to remove the hazards for every place—I am trying to figure a way, how can we get rid of that hazard? . . .

That is why I give this particular suggestion. We have a narrow median, the guardrail is already available to protect the sign. That is my point there. To me it sounds correct.

Mr. CRAMER. Why can we not have a sign of reasonable size being placed on the light post, already a hazard in the center median?

Mr. PRISK. The light pole would have to be completely redesigned to support a sign of that size, for reasons I indicated earlier. The windload on the sign could not be taken by light standards of conventional design.

Mr. MCCARTHY. Could I ask one question?

Mr. BLATNIK. Mr. McCarthy.

Mr. MCCARTHY. Does the New York State Department of Public Works have a safety director?

Mr. PRISK. I think they have a traffic division. They have a design division, of course, and a chief engineer who is very alert to safety considerations. I am not aware that they have a safety director as such within the department of public works.

Mr. MCCARTHY. I think back to my industrial experience, we had a safety supervisor or director whose job it was to just go around and look at these hazards and he was responsible for seeing that they were either guarded or removed. I would think that this is something that we in our State department of public works should have, somebody who will do what Mr. Linko has done, to go around and spot these things and see that they are remedied.

Mr. Linko, did you bring this to the attention of the New York State Department of Public Works?

Mr. LINKO. Yes, I told everybody and anybody who wanted to listen.

Mr. MCCARTHY. What did they say?

Mr. LINKO. I told them over a year ago on some of this stuff; and I look at the brandnew roads they are opening up, and they have the same stuff.

Mr. BLATNIK. The same thing on new highways now being opened up that you told them about over a year ago, is that right?

I look at the brand new roads they are opening up, and they have the have the roadside saturated with these big concrete stanchions, and they have guard rails and bridge abutments close by where they could have been installed.

Mr. MCCARTHY. And they did not take any cognizance of your pointing this out, they did not do anything about it?

Mr. LINKO. I do not see any evidence so far. They are still putting in these big concrete stanchions. And I don't know why. There is no sense to it.

Mr. CRAMER. Mr. Prisk, may I ask one question?

As I understand Dr. Haddon's memorandum of February 16, 1967, which I just referred to a minute ago and which was issued pursuant to the Highway Safety Act of 1966, the draft standards set out for highway safety that I mentioned, geometric design on rural highways and arterial highways in urban areas, do not really deal with the subject of off-the-highway safety features, do they? Off-the-highway problems that we have been referring to, obstructions near the traveled lanes?

Mr. PRISK. Problems such as Mr. Linko has discussed here are dealt with only to a limited extent.

Mr. CRAMER. And as a matter of fact, in November of 1966, the executive committee of the American Association of Highway Officials adopted the report of its traffic safety committee on "Highway Design and Operational Practices Related to Highway Safety," printed in document form in February 1967, which deals with this very subject matter, did it not?

Mr. PRISK. Precisely.

Mr. CRAMER. And yet Dr. Haddon, as head of the new National Highway Safety Bureau, has not seen fit to even adopt these or similar standards relating to the very problems we are discussing, is that not correct?

Mr. PRISK. If I have my dates correct, Dr. Haddon's February issuance that you mention is in the form of a preliminary standard. The final standard is not yet out, and I am informed that it is several weeks away from being out, perhaps even longer than that.

Mr. CRAMER. As of the moment, there is no basic, even minimal standard relating to off-the-highway safety features or hazards which we have been reviewing here this morning, other than the printed AASHO publication which has not been accepted or adopted by Dr. Haddon?

Mr. PRISK. Not by Dr. Haddon, but by the Bureau of Public Roads. The Bureau of Public Roads has accepted that publication and it does control the highway construction. From that standpoint, it has been recognized.

Mr. CRAMER. Dr. Haddon is in charge of safety, and yet his agency has not yet adopted it, is that correct?

Mr. PRISK. Dr. Haddon, with all due respect to him, is not in charge f the road program. The design and construction of highways is outside of his jurisdiction, unless I am mistaken.

Mr. CRAMER. Well, he has jurisdiction under the Highway Safety Act, as I understand it, of 1966, does he not?

Mr. PRISK. Not of the Federal-aid highway program.

Mr. CRAMER. He has authority under section 402—I have the act before me—Public Law 89–564, the new section 402, title 23, United States Code, says that the Secretary shall promulgate "uniform standards relating to highway design concerning highway safety." Has this authority to establish standards been delegated to Mr. Bridwell and Dr. Haddon?

Mr. PRISK. I think you will find a statement of record, sir, made by the Secretary of Transportation, to the effect that the implementation of the safety standards is the responsibility of the Bureau of Public Roads.

Mr. CRAMER. I understand that. You are talking about implementation. You cannot implement what you do not have in existence?

Mr. PRISK. No, sir.

Mr. CRAMER. You are talking about implementing the standards after they have been promulgated. They have not been promulgated yet as it relates to these problems.

Mr. PRISK. That is correct, aside from——

Mr. CRAMER. Therefore, so far as Dr. Haddon is concerned, so far as the safety agency is concerned, so far as conforming to the Highway Safety Act of 1966 is concerned, in which Congress instructed the Secretary of Commerce to establish highway design standards relating to safety, and despite the fact there are in existence proposed highway safety standards relating to these very problems of off-the-highway safety features, there have been no standards adopted to date by the Secretary or by Dr. Haddon and his agency, is that not correct?

Mr. PRISK. I do not agree with you fully. As an example, I take exception in one area that I am quite familiar with, and that is in Interstate signing. The signing standards for the Interstate System are the product of joint work between the State highway departments and the Bureau of Public Roads. These have been approved officially by the previous Federal Highway Administrator for use on the Federal-aid Interstate System. These are the standards in effect today. And until they are superseded by something that Dr. Haddon issues, these remain as the standards. They have a good many safety implications in them.

Mr. CRAMER. But they do not deal comprehensively with the subject matter we are now discussing, off-highway obstructions as they relate to safety hazards?

Mr. PRISK. They do not deal fully with it, that is correct. Highway safety is a very broad field.

Mr. CRAMER. Secondly, there is already in the law, is there not, substantial provision for highway safety research, so that I do not think we should try to give the implication that there are not tools with which to do the job, No. 1—1½ percent of all Federal highway apportionments are available to the States for research. And they must

mandatorily use this 1½ percent for research, which would include safety research, would it not?

Mr. PRISK. Yes.

Mr. CRAMER. Secondly, under the present law an additional one-half of 1 percent of State allocations for the ABC system could be used on a discretionary basis for research, is that right?

Mr. PRISK. That is correct.

Mr. CRAMER. That would also include safety research, would it not?

Mr. PRISK. It could.

Mr. CRAMER. So there is available a mandatory 1½ percent, a discretionary one-half of 1 percent of highway allocations, which today would mean approximately $71 million, three-fourths of which must be spent for research, one-fourth of which is discretionary, and any reasonable portion thereof could be spent for safety research, could it not?

Mr. PRISK. At the State's election——

Mr. CRAMER. This is without recourse, three-fourths mandatory, one-fourth discretionary, and this can be without State matching.

Mr. PRISK. And a good bit of it is being spent for safety research.

Mr. CRAMER. And that is available, and it does not even require State matching. It can be 100 percent Federal funds for research, right?

Mr. PRISK. No; not necessarily. Most of it is matched.

Mr. CRAMER. The law permits it to be without matching.

Mr. PRISK. Permits it, that is right. It is not the practice.

Mr. CRAMER. And in addition to that, the Secretary himself under present law has authority for research.

Mr. PRISK. With other funds, yes.

Mr. CRAMER. And he can spend up to what, 3¾ percent of authorized Federal-aid highway funds for administration, including research?

Mr. PRISK. That is the legal limit.

Mr. CRAMER. Now, in addition to that, under the Highway Safety Act of 1966, the Congress specifically required the establishment of standards regulating design standards; that is another tool available, is it not?

Mr. PRISK. Yes, sir.

Mr. CRAMER. In addition to that in the Highway Safety Act there was written in a provision with regard to research concerning safety. Section 403. Is that not correct?

Mr. PRISK. Yes. This is basically an enlargement or reinforcement of existing authority.

Mr. CRAMER. And Congress authorized appropriations under the general safety provisions of section 402 of some $67 million for fiscal 1967, $100 million for 1968, $100 million for 1969. In addition to that, for research itself under that act, section 403, there was authorized to be appropriated the additional sums of $10 million for 1967, $20 million for 1968, $25 million for 1969, is that not correct?

Mr. PRISK. I believe those are the correct figures; yes, sir.

Mr. CRAMER. So I think the record should show that there are a lot of tools available to prevent this very thing from happening, at least in the future, and there have been tools available for many years in the

past under other acts enacted prior to the Baldwin Amendment of 1965 and the Highway Safety Act of 1966, I am advised by counsel on our side that they go back some 20 years. The statutes authorizing research that I mentioned just a few moments ago. I ask that a summary of highway research provisions be inserted at this point in the record.

Mr. BLATNIK. Without objection, so ordered.

Federal funds for highway research and planning (including highway safety research) are available under four provisions of law.

1. Under section 307(c)(2) of title 23, United States Code, one and one-half percent of *all* Federal-aid highway apportionments are available only for research, investigations, studies, etc.

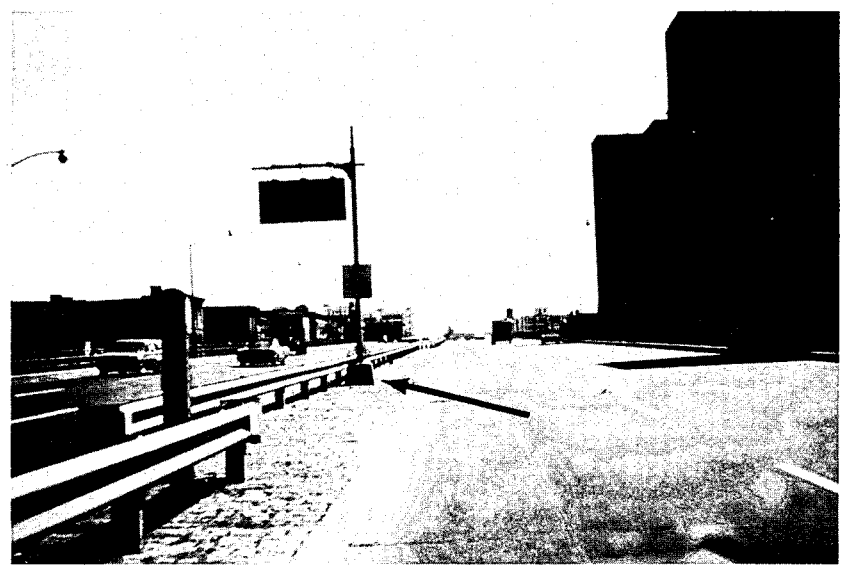
On the basis of the 1968 apportionment of $4.4 billion, this would make about $66 million available annually.

2. Under section 307(c)(3), one-half of 1 percent of funds apportioned for the ABC system are available for research, etc., upon the request of a State. On the basis of the 1968 ABC apportionment of $1 billion, this would make about $5 million available annually.

3. Under section 307(a), the Secretary may use administrative funds for research. Administrative funds are deducted from Federal-aid highway apportionments in an amount not exceeding 3¾ percent of sums authorized to be appropriated annually. For fiscal year 1967, $60 million (1½ percent) was deducted for administrative costs. For the same fiscal year, $11,073,000 of administrative funds was budgeted for research.

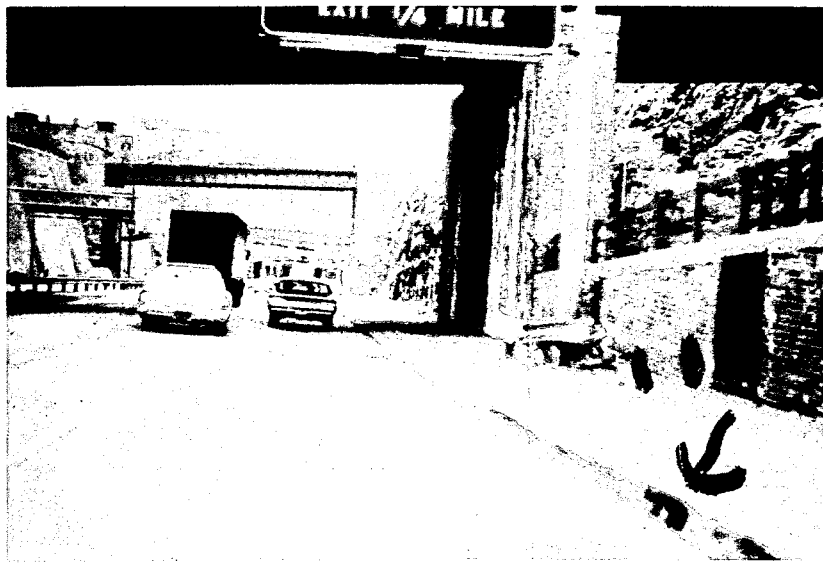
4. Section 105 of the Highway Safety Act of 1966 authorizes appropriation of $10 million for fiscal year 1967, $20 million for 1968 and $25 million for 1969, for highway safety research and development.

Mr. W. MAY. Mr. Linko, proceed.



Mr. LINKO. We should provide a safe installation so that if there is an accident the car can slide by on both sides—only one side is protected here. As you see here, we are saturating the right shoulders, and the rail has been hit.

Mr. BLATNIK. What was that?



Mr. LINKO. Let us say it looks like this to begin with. If they install more guardrails and move the sign back against the wall.

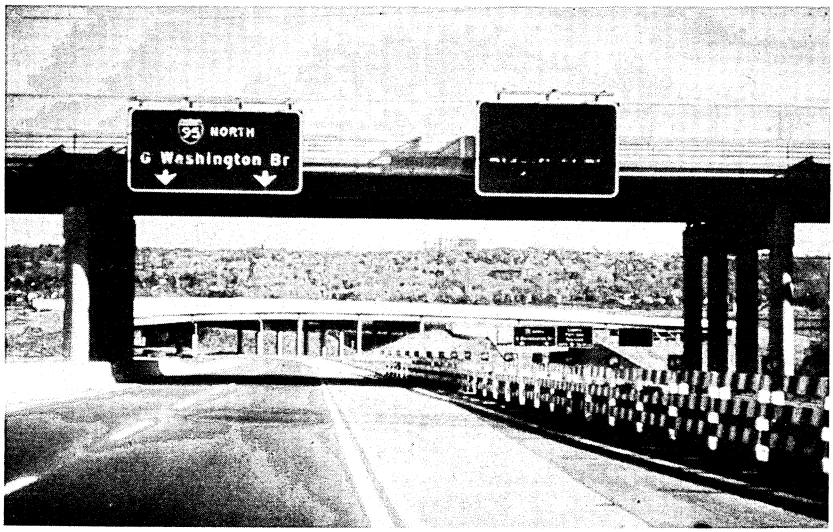
Mr. BLATNIK. Move the stanchion back against the wall?

Mr. LINKO. You could have phased the hazard out. They call for 75 feet of guardrail for a sign like that. It is only about 24 there. If they would have put it back nearer the wall and installed the 75 feet of guardrail right to the wall, somebody can slide right by. At 50 miles an hour, that guard rail is not long enough to do the job.

Here is where they did a good job with the sign. They put the stanchion right up against the wall, about 15 inches wide, but then they put this guardrail and put it out some 30 inches.

Mr. BLATNIK. In other words, you just cannot miss very easily?

Mr. LINKO. That is right. With a proper guardrail, you could slide right by with no damage at all.



Here are some signs showing you that we could take the signs off the posts and put them up on the bridge itself.

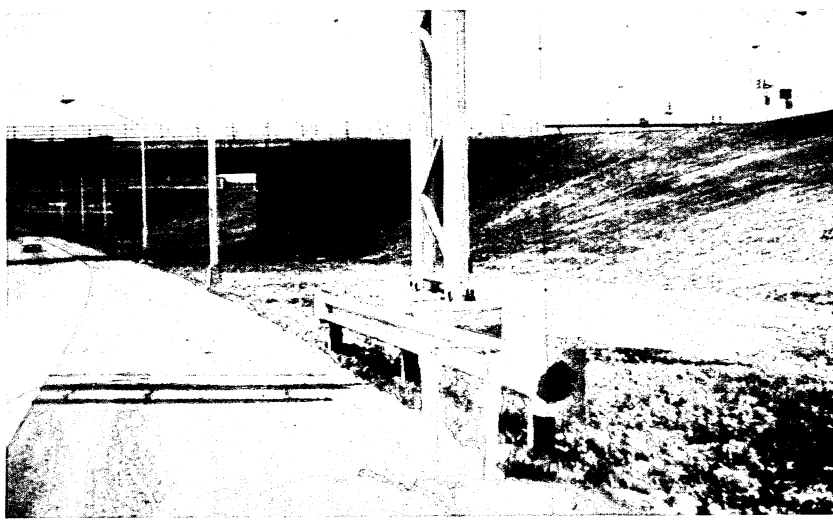
We created the second hazard; it does not need to be there. It would have been cheaper to put it up on the overpass.

Mr. BLATNIK. Do you feel that this rather elaborate and apparently expensive superstructure cost is not necessary to hold this sign; is that correct?

Mr. LINKO. Yes.

Mr. BLATNIK. The sign could be put on the bridge as indicated in the previous slide?

Mr. LINKO. The distance is not too far. If you would keep the safety factor in the back of your mind, it would be advantageous to put it there, even if you have to make the sign a little bit bigger, and you will be able to see it. I understand those bridges cost $15,000 to $30,000. And here is a closeup of the base of the sign support. Again, see how short this guardrail is—this is a high-speed road.



Mr. BLATNIK. Cost how much?

Mr. LINKO. $15,000 to $30,000.

Mr. BLATNIK. Would that be an approximate rough estimate of the cost of this structure, Mr. Prisk?

Mr. PRISK. Probably closer to the low end of that range, as close to $15,000 to $20,000.

Mr. BLATNIK. $15,000 to $20,000?

Mr. PRISK. Yes.

Mr. BLATNIK. Mr. Cramer.

Mr. CRAMER. Do you have a requirement relating to the distance between an interchange and an interchange notice sign?

Mr. PRISK. Yes, there is a requirement for a warning such as you see here, a half mile. This is approximately a half mile, but not to the nearest foot.

Mr. CRAMER. Do your regulations prevent it from being located on the bridge because of the distance requirement?

Mr. PRISK. No.

Mr. CRAMER. If you have it on the bridge, can it be just an approximation, such as "exit one-third of a mile," or whatever it is? You do not have to have exactly 1 mile, half mile, and so forth, do you?

Mr. PRISK. For the benefit of the motorist, we give attention to driver reactions and the limits of human behavior and performance. We try to give major interchanges a 2-mile notice, a 1-mile notice, and a third advance notice sign about a half or quarter of a mile ahead. So there is no reason for distance considerations that that this sign could not be on the bridge.

Mr. CRAMER. Could this sign be on the bridge under your present regulations?

Mr. PRISK. Yes.

Mr. CRAMER. I understand maybe some highway departments consider bridges esthetically beautiful, and therefore should not be marred with signs; is that true?

Mr. PRISK. That is true. And probably is real also, besides being true. It is an attitude that the bridge engineer reflects also in such details as that offset you see in the right abutment [indicating]. The wall is brought out and set back.

This is not entirely a structural consideration. You find much interest in the esthetics for bridges, and I expect that those in charge of the esthetics of a bridge would not welcome a sign on the bridge.

Mr. CRAMER. Then we are talking about beautification. We are sacrificing safety for beauty, then. Do you think that is justified?

Mr. PRISK. I place safety ahead of beauty.

Mr. CRAMER. I have been doing it for a long time.

Mr. CLAUSEN. Mr. Prisk, I would like to develop this point just a little bit. Could you answer whether or not any of the States, to your knowledge, have someone in a position of a safety engineer overseeing all the plans and specifications prior to being submitted for bid and the responsibility to review and approve them as they relate to safety specifically?

Mr. PRISK. I can positively state that all the highway departments do not have such a person, and I think that to the best of my knowledge there is no highway department that has a safety engineer by that

title and by that title alone, who has the type of function that yo mention.

There are highway departments that have persons identified a traffic and safety engineers or planning and safety engineers, possibly But this straight title of a clear safety function, a single-minde function, looking toward safety of the highway is not a thing that know has been identified in the highway departments up to this time

Mr. CLAUSEN. Do they have anyone that is specifically assigned th responsibility of approving these projects with the consideratio given to the safety factor involved—anyone?

Mr. PRISK. Yes, when you come right down to it, the chief engi neer or the chief administrative official, of course, is responsible fo the approval; but these reviews of project plans go through a serie of approvals. They are passed to the traffic engineer for review o the level of service that the project will provide in terms of traffi capacity.

Mr. CLAUSEN. Why has this not been done, if there is someone wh is supposed to be looking after it?

Mr. PRISK. I daresay that some of these reviews that have bee done in tandem have come up to the top and rejection of traffic an safety considerations has sometimes occurred.

Mr. CLAUSEN. Do you, in your opinion, feel that the States shoul have someone who oversees these project recommendations with th safety consideration primarily in mind?

Mr. PRISK. Yes; and we have suggested the establishment of sur veillance teams on existing highways to learn something about th operation of these highways, so that this function that you mentio for new projects could be performed.

Mr. CLAUSEN. Is the Bureau of Public Roads—now, they shoul have possibly someone in their divisions overseeing the State pro gram on safety——

Mr. PRISK. I do not know if I quite have your question. Would yo mind saying that again?

Mr. CLAUSEN. Have someone in the Bureau division offices revie the project recommendations that are coming from the State fro a safety standpoint because after all, where we have the Federal-ai highway program as well as the Interstate highway program, w do have an interest, and it would seem to be logical that the Bureau o Public Roads would have someone overseeing this. As you know, som of the people in the various States and their departments becom victims of bureaucracy and thereby are inhibited in making th recommendations that we think would add to highway safety.

Mr. PRISK. The design engineer has that responsibility in our fiel organization, to examine plans for safety and capacity. So we reall do have a person in the organization now who is charged with tha consideration.

Mr. CLAUSEN. But do they have in mind principally the safet measures?

Mr. PRISK. It would be pretty hard to get them to admit that the do not.

Mr. CLAUSEN. From these pictures, would you not say somebod should be looking at it?

Mr. PRISK. I would say so.

Mr. CLAUSEN. Thank you, Mr. Chairman. I think that answers my uestion.

Mr. BLATNIK. The Chair does not mean to interrupt. We are going in much detail. The questions are very pertinent. I thought we would continue in an orderly presentation of the record to show the different types of problems that have come up in spite of the laws on the books ow, and in spite of the directions by the Bureau of Public Roads, and more recently by the new Department of Transportation.

Mr. CLAUSEN. I agree. The only thing that occurred here was that it came to my mind, and I felt it might be pertinent to include it in he record at this point.

Mr. BLATNIK. Both witnesses will continue tomorrow. Before we adjourn, Mr. May.

Mr. W. MAY. May I make a statement, Mr. Chairman, to place this testimony that we have heard this morning in proper perspective. I might say here that the type of hazards Mr. Linko has been discussing is not limited to New York. As the hearings progress we shall see such hazards are commonplace and widespread, and they exist at a critical level in all sections of the Nation. Thank you.

Mr. BLATNIK. The Chair would like, before concluding today's session, to comment upon the appearance before our subcommittee of Mr. Linko, and the excellent cooperation and assistance he has given to the committee staff.

It is a real pleasure to all of us on the committee to recognize the work and results accomplished by a private citizen who obviously is earnest and sincere and certainly persevering, and working alone with o organization to finance him or to encourage him and continuing because of his conscience and his belief.

Mr. Linko has compiled a report that would do credit to the most qualified traffic engineers. Indeed, he has brought to the subject matter before the committee a layman's-eye view that might well be given urgent attention by our highway design, traffic, and safety engineers alike.

Mr. Linko's alertness, concern, and unselfish dedication deserve the ratitude of all his fellow citizens, and certainly the members of this ubcommittee. Mr. Linko, we thank you.

Mr. Linko and Mr. Prisk, you will both be available here tomorrow ıorning? The hearings for today are adjourned until 10 o'clock omorrow morning.

(Whereupon, at 12:30 p.m., the hearing was adjourned, to reconvene t 10 a.m., on Wednesday, May 24, 1967.)

HIGHWAY SAFETY, DESIGN AND OPERATIONS

Roadside Hazards

WEDNESDAY, MAY 24, 1967

HOUSE OF REPRESENTATIVES, SPECIAL SUBCOMMITTEE
ON THE FEDERAL-AID HIGHWAY PROGRAM
OF THE COMMITTEE ON PUBLIC WORKS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:13 a.m., in room 167, Rayburn Building, Hon. John A. Blatnik presiding.

Present: Messrs. Blatnik (subcommittee chairman), Johnson, McCarthy, Howard, Cramer, Cleveland, McEwen, Duncan, Schadeberg, Zion, and Denney.

Staff present: Same as previous day and Sherman S. Willse.

Mr. BLATNIK. The Special Subcommittee on the Federal-Aid Highway Program of the House Public Works Committee will please come to order. We are resuming our public hearings in matters pertaining to efficiency and safety on Federal aid highways.

Before we get into our business, I have a brief announcement. We have visiting today another group of students from the Broome Junior High School, Rockville, Md. Mr. Charles Coblentz is the instructor with the group.

We had a fine delegation yesterday morning. We welcome you and we hope you will find the hearings informative and interesting. It is in the tedious and laborious sessions of subcommittees and full committees that the major work of the legislative branch of your Government, your Congress, is accomplished. We hope you will find this interesting and informative and we commend you for your interest in coming here. We welcome you.

Back to the hearings. We continue this morning, with the testimony of Mr. Joseph Linko, of New York City.

To review, for those who may not have been with us yesterday when we opened the hearings, Mr. Linko is a private citizen. He is a layman who became concerned at what he saw alongside highways while traveling around the environs of his native city. Without any encouragement or backing of any kind, and at considerable personal sacrifice and effort, he began cataloging what he considered to be examples of deficiencies in the design and construction of our highways, particularly from the safety standpoint. Over a period of 4 years, Mr. Linko put together an impressive display of documented photographs, part of which we witnessed at yesterday's proceedings.

As we resume today, I want to make one point very clear. As is our custom, this subcommittee scheduled public hearings only after

an exhaustive in-depth investigation of the subject matter had been conducted by our staff. I believe I am correct, Mr. May, this took place during most of the last year, about a good year in duration of time. Is that correct?

Mr. W. MAY. Yes; at least, Mr. Chairman.

Mr. BLATNIK. Now, this investigation has disclosed that the matters testified to by Mr. Linko are by no means confined to the Greater New York area to which his testimony relates.

On the contrary, during the course of our hearings it will be shown through other witnesses including members of our staff, that the deficiencies are nationwide in scope. They were discovered in all nine regions administered by the Bureau of Public Roads, each of which was visited by representatives of our staff in the course of the investigation.

I feel compelled to make this point at the outset of today's testimony lest anyone get the erroneous impression that the serious matters we are now considering are in any sense confined to one locality or region; in short, that they were sort of handpicked, that this was a loaded sample of what is on the highway system, because this is not the case.

Our second witness sworn yesterday was Mr. Charles W. Prisk. Mr. Prisk is Deputy Director of the Office of Traffic Operations, Bureau of Public Roads, U.S. Department of Transportation. He is an engineer by background. His qualifications in the highway field are impressive, particularly in the area of highway safety.

As a further example of the splendid cooperation extended to this subcommittee in the past, the Bureau of Public Roads has made Mr. Prisk available to us for consultation and technical assistance during this investigation. His knowledge of the subject and his enthusiasm for improved safety conditions on our highways have proved invaluable to us and we greatly appreciate your cooperation, Mr. Prisk. We will now continue with the testimony of Mr. Linko.

Mr. W. MAY. Mr. Linko, once again would you relate to the subcommittee how you began your interest in highway design and construction? What then took place?

FURTHER TESTIMONY BY JOSEPH LINKO, NEW YORK, N.Y.

Mr. LINKO. Yes. On a certain section of the State highway I travel every day I noticed we had all types of road obstructions along the right shoulder area, and these obstructions were chopped up by cars and they were left and no one seemed to think it was important to remove them. After bringing it to the attention of the highway officials and finding they did nothing I decided to take a few pictures, and I photographed these locations. But then I started to notice there were more.

Mr. W. MAY. Were you a photographer?

Mr. LINKO. No; I just bought a camera, because they did not listen to me, and I took these pictures. So as I went along, the more pictures I took, the more I found and there was no end to it—because the more I found, the more they built and I could not keep up with them.

Up to this very day on the brand new Interstate highway they just recently opened up, they had the same conditions, even though I rought this to the attention of the State officials and I showed some of his material to the Bureau of Public Roads, to the Office of Highway Safety. And I saw the memorandums that they sent out regarding this, ut no one seemed to pay attention, even though they were sent out.

Mr. W. MAY. Do you recall when you first made your presentation o the Bureau of Public Roads representative?

Mr. LINKO. Yes.

Mr. W. MAY. Do you remember what month it was?

Mr. LINKO. No; I do not remember that. It was during the AASHO ieeting.

Mr. W. MAY. October 1965?

Mr. LINKO. Yes.

Mr. W. MAY. After that, you saw some of the directives that were ssued from the Bureau of Public Roads in Washington out to the States?

Mr. LINKO. Yes. I pointed out the unnecessary hazards in the gore areas. I noticed that in the manual they were recommending to put them there. Then I also read some IM reports and these said that they should not be installed there in massive concrete foundations. But ur State has ignored that and they are still building them today.

Mr. W. MAY. You are concerned because you saw these directives being issued from Washington in late 1965 and during 1966? And yet recently, in the past week or so, you still see them being built on the highway; is that correct?

Mr. LINKO. That is correct, on the brand new highways.

Mr. W. MAY. I think now we might continue with your slides.

Mr. BLATNIK. Before we get into the presentation of slides, we welome the additional students from Broome Junior High School.

Before we turn all the lights out, we also have another distinguished uest, a Member of Parliament from the United Kingdom, from ondon, Mr. Dayell. Mr. Dayell has traveled in a good many parts f the world. He has been in the United States on previous occasions, nd has just come down from Expo 67 in Montreal, Canada. Mr. ayell is a member of the Committee on Technology in his legislative ody—and we welcome him.

Mr. DAYELL. Thank you very much.

Mr. BLATNIK. Mr. May, will you proceed with your presentation?

Mr. SCHADEBERG. Mr. Chairman, I wonder, before we start, if I ight ask a question?

Mr. Linko was talking about obstructions on the right shoulder. as any study been made as to whether the obstructions on the right houlder are involved in more difficulty, causing more danger to the river, than obstructions in the median strip, or on the left shoulder?

Mr. BLATNIK. Mr. Prisk, with your many years of experience, what vould be your response to that question?

Mr. PRISK. I think on the freeway type facility, Mr. Chairman, that approximately the same number of vehicles run off either side of the pavement. It is within a few percent of being even.

Mr. BLATNIK. Would it be correct to further state, Mr. Prisk, that ve perhaps have more latitude about doing something, moving ob-

stacles on the right side of the roadbed, than we do on the left? Yo have more limitations in what can be done on the left side?

Mr. PRISK. This is correct. Once the right-of-way is obtained, o course, you do have outer limits that you work to. But because of slop considerations, your constant dimensions are in the cross-section be tween the shoulders of the roadway but the roadside itself is a varyin width. So there is an opportunity to make adjustments in the roadsid more so than in the median.

Mr. W. MAY. Another factor we might consider, Mr. Prisk, is that o many of our highways, the wider, more usable shoulder is on you right; is that correct?

Mr. PRISK. This is true.

Mr. W. MAY. So many of our highways may have a 4-foot shoulde on the left which is not too wide, particularly for breakdown, wherea on the right there may be a 10-foot shoulder. What Mr. Linko is com plaining about is many of these obstacles remain very close, within couple of feet of that usable 10-foot shoulder.

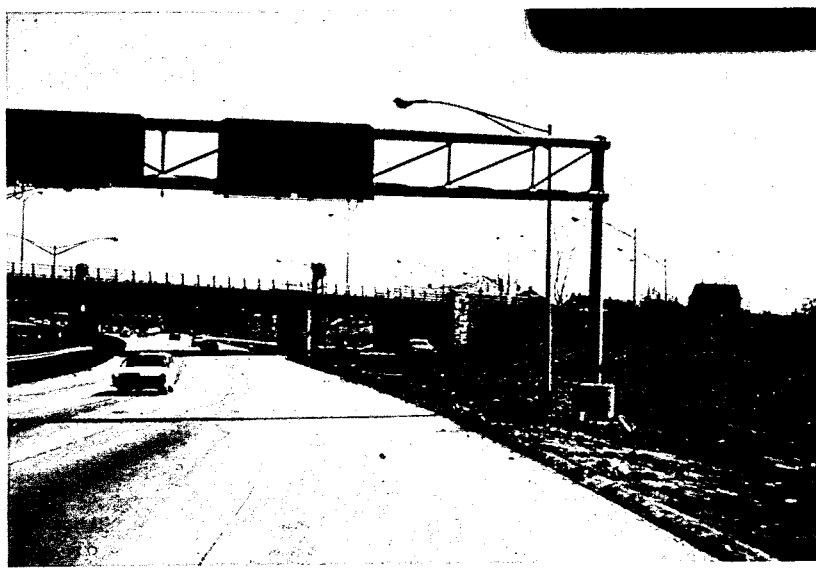
Mr. LINKO. Yes.

Mr. W. MAY. Whereas, in the city, when you had the small narro medians, normally you had some type of median divider, so you alread had your protection there. Mr. Linko was suggesting we put the sup ports and signs in the median between the median barrier. Is that right Mr. Linko?

Mr. LINKO. That is right. Even if there is not a median barrier, on belongs there. They are going to put one in sooner or later, so wh not put it there? Actually the sign does not have to overhang as muc because there is no full shoulder there to begin with. It will be close to the guy that has to see the sign and it will never be hit, because th guardrail is there to protect the installation.

Mr. W. MAY. Yes, sir. Maybe we could now continue with your slid presentation, Mr. Linko.

Mr. LINKO. In these two slides you see that, as a general practice they take a sign and put it 100 feet away from the bridge, 100–200 feet



I suggested to everybody that I could talk to, why not put the sign on the overpass? Or take this concrete stanchion and put it where the original hazard is already, which is the bridge abutment, and use one guardrail to phase out two hazards at one time and you end up with one hazard.

This is the right way to do it. You can save on the cost of the supports. But in any case, if they could not do it this way, they could put this sign right next to the bridge abutment and use one guardrail to phase out the two hazards and wind up with one hazard.

Here you have two separate hazards. There is an Interstate high way and you can see they are not even protecting the bridge abutment

Mr. W. MAY. Mr. Linko, referring to figure 1–055, if we look at th small piece of guardrail, we can recall what the manual calls fo Highway Research Bulletin 81, referring to guardrail. I think ther is always the suggestion, unless you are going to anchor the guard rail, maybe a minimum of 75 feet should be used to cause that guard rail to properly perform. But throughout your presentation, I notic we see time and time again short pieces of guardrail.

Mr. LINKO. That is right. That is 24 feet instead of 75 feet.

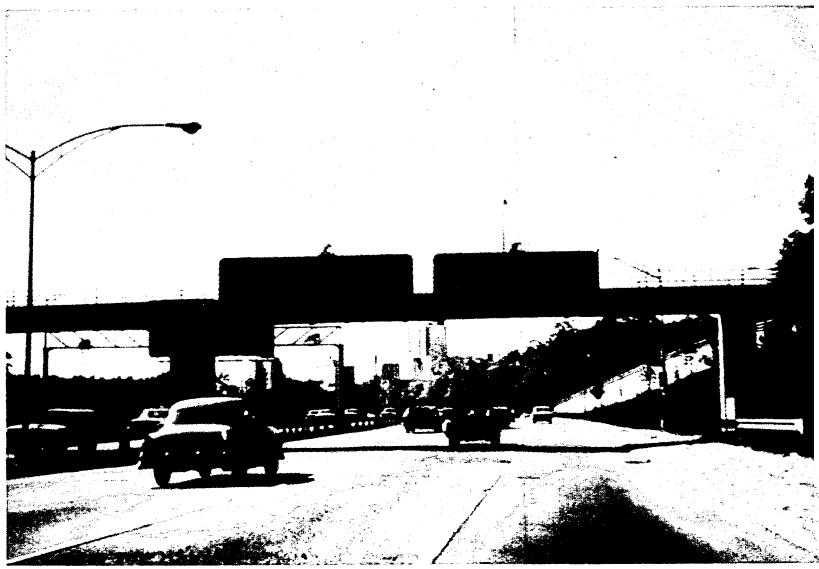
Mr. W. MAY. Mr. Prisk, what do you think of a 24-foot section o guardrail on a location like that?

Mr. PRISK. Unless the guardrail installations are 75 feet or more length, you get bending of the rail and it is impossible to develop ten sion to give it proper strength; these short sections are not useful a a guardrail.

Mr. W. MAY. The hazard at the end of the guardrail, again, if i were struck at an abrupt angle, it would not hold up? It would no perform?

Mr. PRISK. That is correct.

Mr. LINKO. Here also you can see where they installed two signs o the top of an existing walking overpass. That shows the job can b done. And right behind, on the left, you can see they built a sig bridge for a sign.



Mr. BLATNIK. Mr. Linko, excuse me. Just so you can identify for th committee, you say to the left, you are talking about the structure o the other side of the bridge, the two red dots?

Mr. LINKO. Yes. That is a sign bridge to hold up a sign.

Mr. BLATNIK. The whole structure is just to hold up two signs?

Mr. LINKO. That is right.

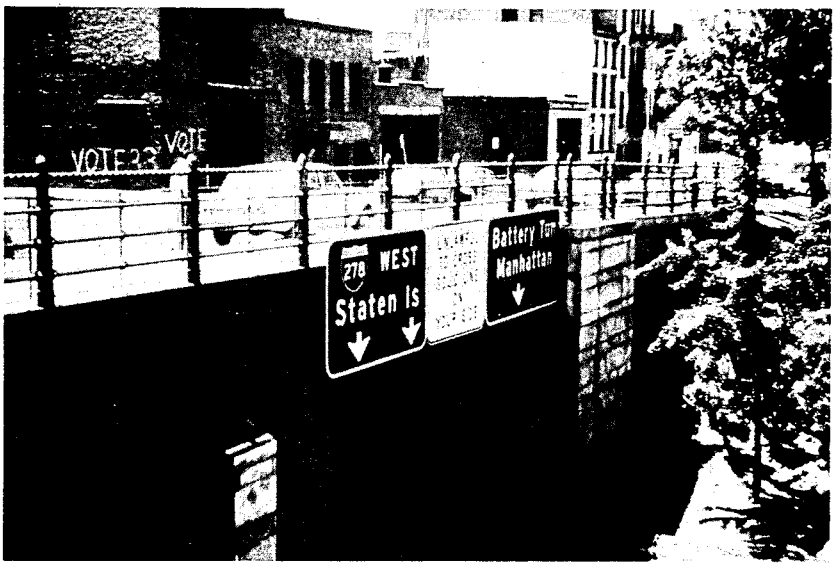
Mr. BLATNIK. On the right-hand side, they use the bridge structure?

Mr. LINKO. They use the walk bridge.

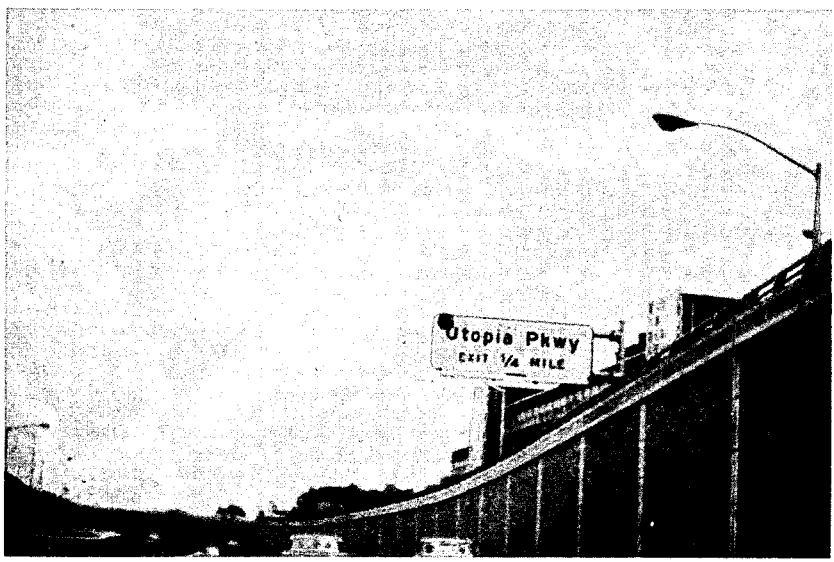
Mr. BLATNIK. They have no structure separate for the sign; they put the two signs on the bridge structure.

Mr. LINKO. That is correct. All over the highway you can see we can use these existing overpasses.

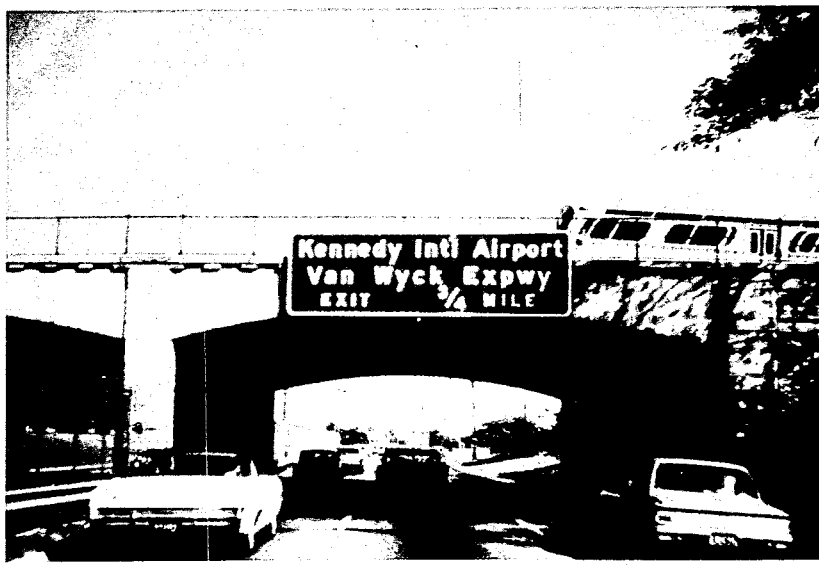
It is less costly. The maintenance would be easier. You can slip this off at the top. We know how to do the job.



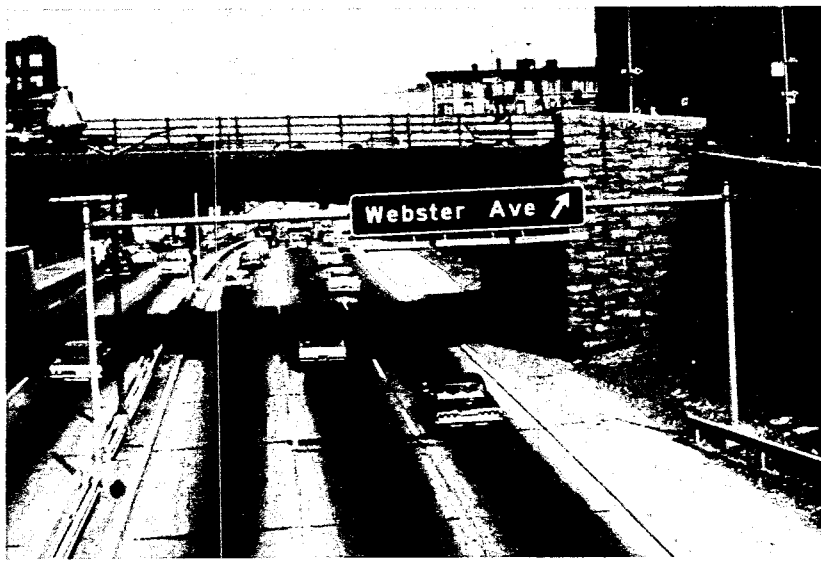
We can even preengineer these things into the new highways, into the walls. But it is very seldom done.



To talk about esthetic values. Here is a bridge with a sign on it and I feel this looks beautiful. I think the way it is written in the manual is discouraging the engineers from using these bridges for signs.



Now, this is what you often see. Here they had a choice of putting the sign on the overpass and they did not do it. Then they had the second choice of putting it next to the bridge abutment and using the same guardrail to phase out a hazard that was not protected to begin with and they failed to do that. They created two separate hazards.



Mr. W. MAY. I notice that the concrete pedestal on the left sign support seems to jut out beyond the median guardrail.

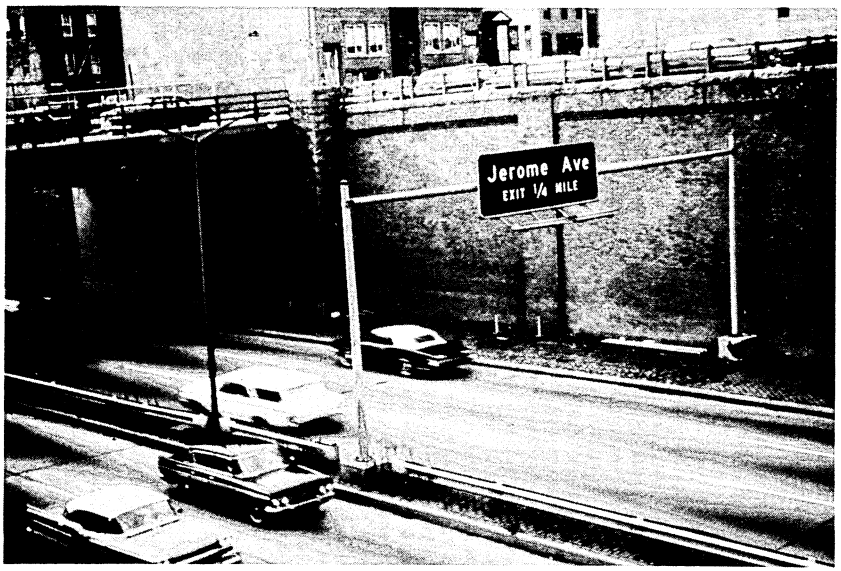
Mr. LINKO. Yes; they should go around for safety.

Mr. W. MAY. The short piece of guardrail for the support on the right would be another hazard, and the bridge abutment is left unprotected.

Mr. LINKO. All these are really unnecessary. It has nothing to do with money; it is just simple logic. There are no funds involved here.

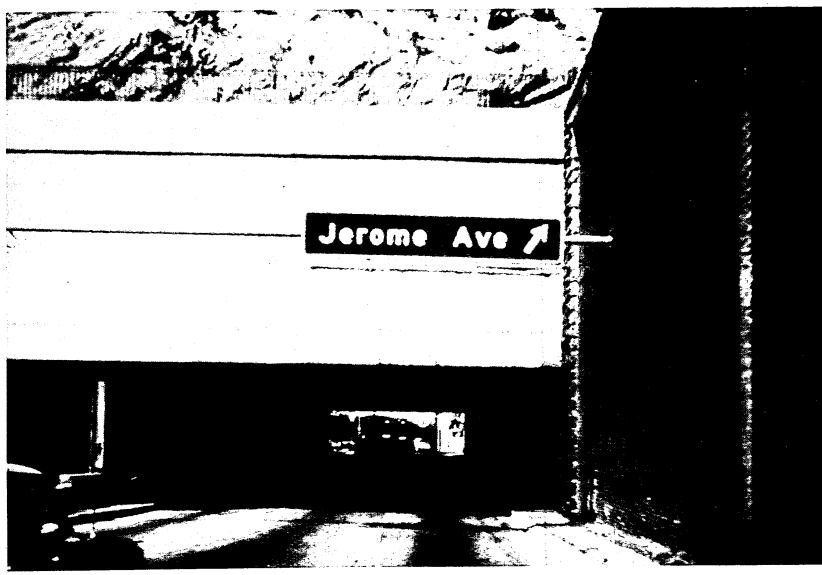
Mr. W. MAY. Had we put the sign on the existing bridge structure, we would have saved money?

Mr. LINKO. That is right. This is what you see all over the highway.



There is a bridge structure there, and here you see them installing guardrail to phase out a bridge abutment that should not have been there. This is a depressed highway and you do not need bridge abutments on depressed highways. The walls should be smooth. They made a mistake. They made bridge abutments. Now they are phasing it out. As you see in this picture they phased the bridge abutment out, but they are not interested in the concrete stanchion holding up the sign.

And this.



This points out you did not need the concrete stanchion. Here they had no room in the shoulder to put it, so they used the wall.

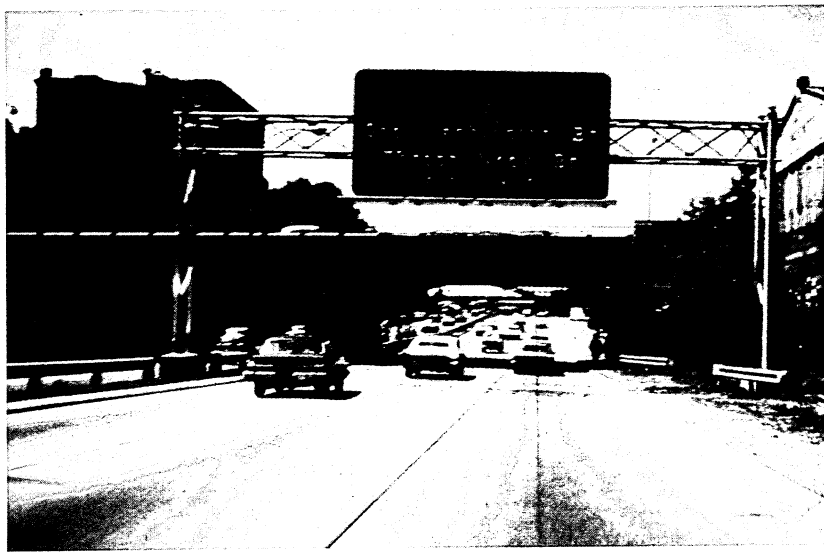
Mr. W. MAY. Here is a point we might make now and later on in your presentation. We make a mistake initially when we build in a

bridge abutment, then we add a couple of sign supports to create additional hazards. Now we are going back to correct the initial mistake of the initial abutment; we are going to put some guardrail in. Then we should look to see how better we could place the guardrail. The guardrail could have been drawn back here (fig. 1–063) and ended up protecting the motorists from this concrete pedestal on the right sign support.

Mr. LINKO. That would have been the proper thing to do, but evidently one job had nothing to do with the other. This is why I put this program together. Nobody knows what the other guy is doing.

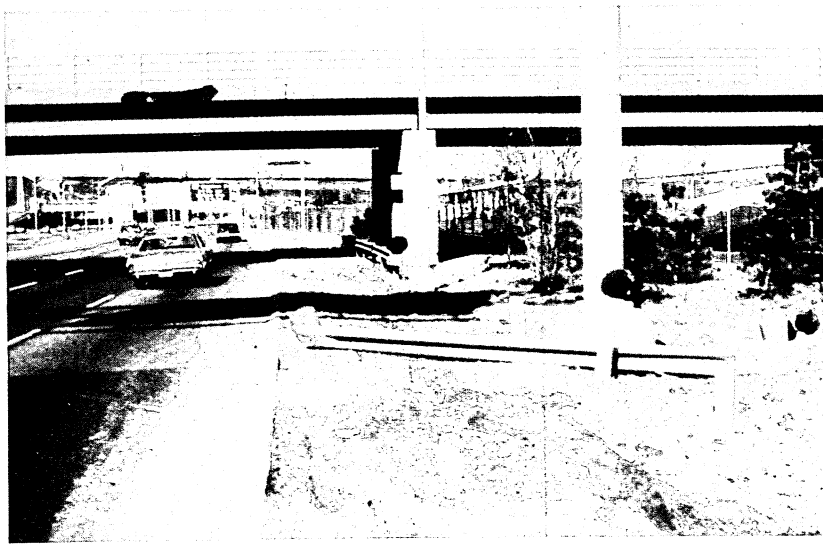
And here you can see another sign that could be put on top of an overpass, and that is not going to look bad. You will notice the marks; I want everybody to concentrate on the marks, because they

show something. They show you unnecessary hazards along the roadsides. If this sign was put up on top of there, you could eliminate one of these.



I am showing you a series of these things showing you this is not just one or two. With many signs in my section, they made unnecessary hazards.

Here you see one that was hit because of that reason. Right there was an overpass where the sign could have been and you could have eliminated this sign support completely.



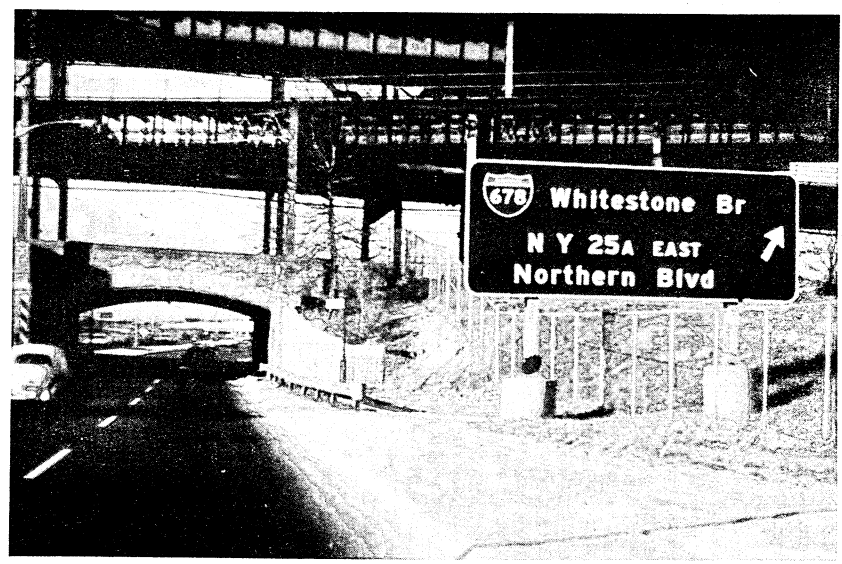
Take a look at this small sign and massive concrete and everything. The guardrail is not even protecting the concrete stanchion, because you can run right behind it.

Mr. W. MAY. Mr. Prisk, could you give us an estimate of what that supporting structure for that small sign might cost?

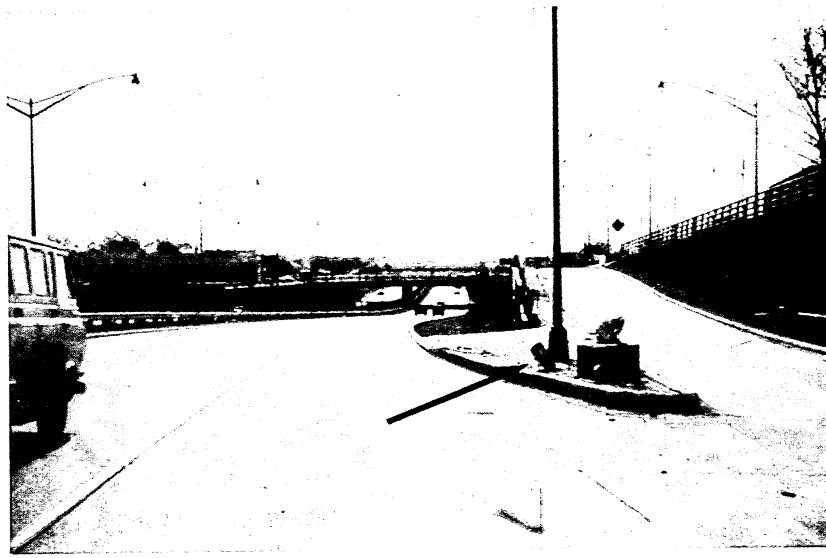
Mr. PRISK. I would say $5,000 or $6,000.

Mr. W. MAY. So if we put that small sign on the existing overhead bridge structure, we might have saved $5,000 or $6,000 and done away with a couple of hazards? Is that your point, Mr. Linko?

Mr. LINKO. That is right. The guardrail is not even protecting the concrete stanchion the way it is there. You can run right into it.



Here also you can see this sign could be up on the bridge. Everywhere we look, we have failed to take into consideration these extra hazards.



Here is a sign that was knocked down. It has been like that for 2 years. They had an exit sign that should not have been there. Once knocked down, it should have been removed, but nobody wants to take the responsibility of removing it. Now this is a killer.

Mr. W. MAY. Is that the knocked down sign that we see to the right of the picture?

Mr. LINKO. That is right, lying on the side. All it says is "exit." After 2 years, this concrete stanchion is still there to wipe out anybody who makes a little mistake, you see. And that is one of the things I am pointing out. We are failing to maintain our highways or to clear the unnecessary hazards.

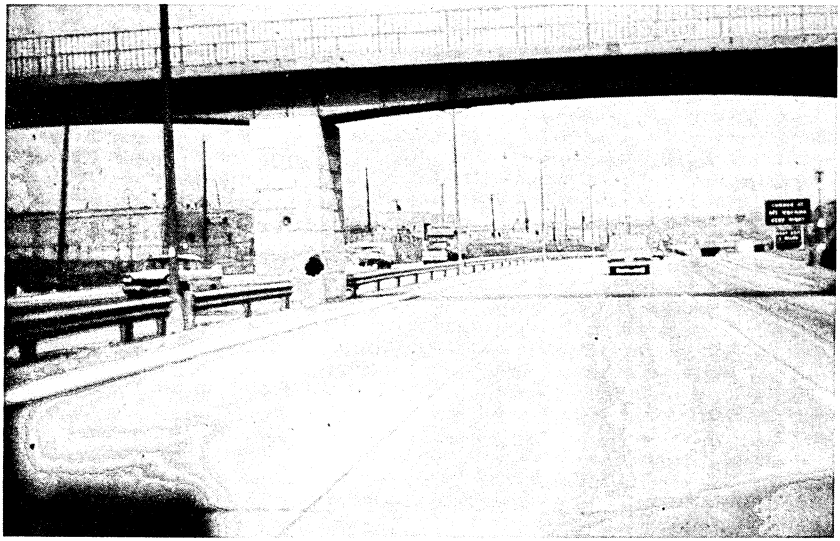
Mr. W. MAY. Were you suggesting yesterday the Bureau and States should run a crash program to go back and remove that type of obstacle? Get that concrete out of there?

Mr. LINKO. Not only that type, but every other unnecessary hazard. Even that curve is a hazard. Most cars run that at high speeds. If you clear that area and taper the curb, and if the car goes over it, he can still go right or left. Once he hits the curb, his tire will blow out and it can throw him into the stream of traffic and he can involve three or four cars.

Mr. W. MAY. Is that a breakaway light pole?

Mr. LINKO. Right. I have not got the picture, but the sign that was originally on that big heavy concrete stanchion is on the light pole now saying "exit," showing we did not even need it to begin with.

Another thing I notice is the installation of guardrail which I feel is wrong. They had the material to do the job, but they failed to install it in a proper manner. Here you see a tapered curb and anyone that

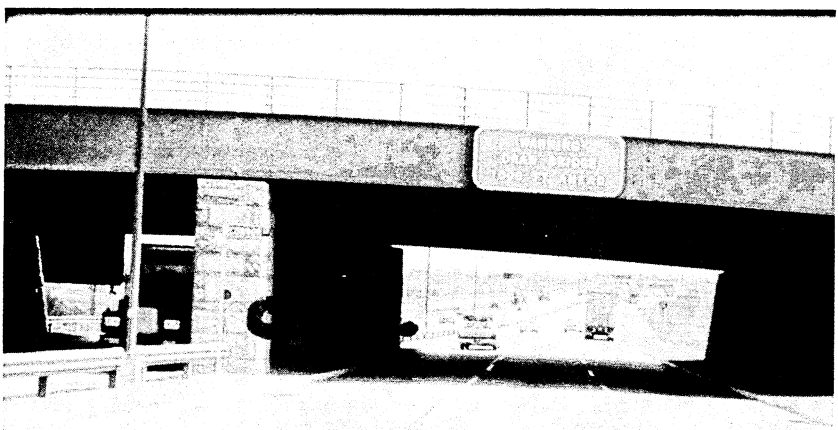


jumps that curb and slides along the guardrail has to slide into the abutment.

That guardrail could have been alined so that as you slide by, you could pass that abutment. Just because they call it a "center barrier" does not mean it has to be put in the center of that pole.

And here you see another picture of the same deficiency. Besides that, I want you to notice all the dots on there. Every one of those dots is a potential hazard somebody could snag onto there.

Mr. W. MAY. Mr. Prisk, is that a proper installation of guardrail?



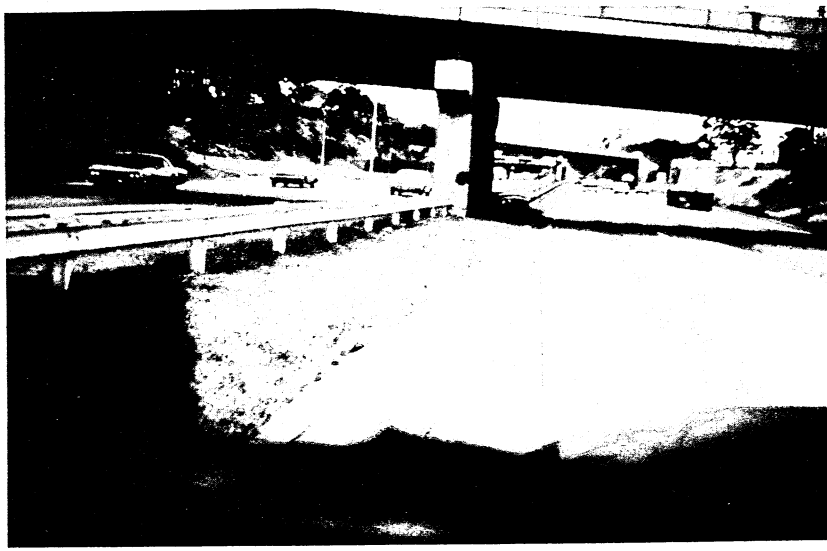
Mr. PRISK. The guardrail properly should go through the undercrossing structure and shield the center pier.

Mr. W. MAY. Yes. Notice when the guardrail comes to the light standard up there, it breaks and we begin another piece on the other side of the light standard. Is that proper?

Mr. PRISK. No. Again, on a center barrier, it is entirely practical and certainly desirable, to erect the light standards inside the barrier, not outside.

Mr. LINKO. We failed to go around the pole and, besides that, we have all the separate hazards. If the guardrail continued right through there, you would have a sliding effect, but a guy hasn't any chance but to die at this particular point.

This would be the proper way to do it, go around it so the guy can slide right by.



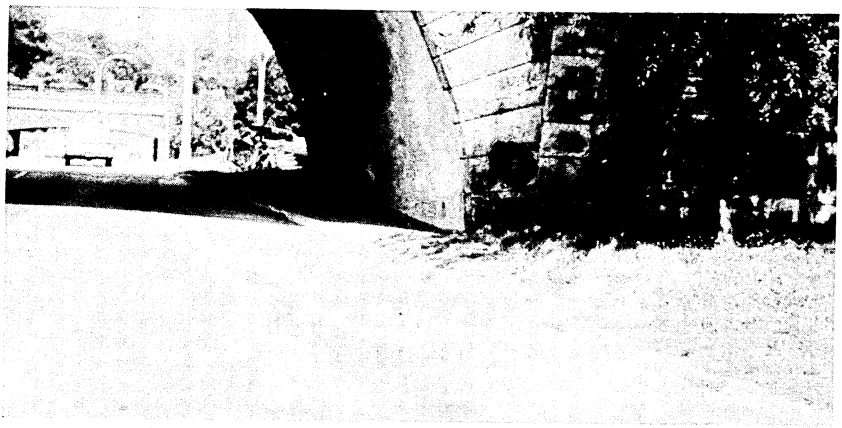
Here you see tire tracks of a marine, off on leave, going to Washington. He did not even touch the guardrail. He caught that corner like I have been complaining about in the last few slides and was killed. I feel he got killed for no reason at all. If that guardrail were installed right, he would have slid by there. Many people are being killed on these same locations, and we are doing nothing about it.

Mr. W. MAY. Excuse me. Was this in New York?

Mr. LINKO. No, this was in Connecticut. Even though I was not interested in Connecticut, when I read this in the paper, I wanted to see if they had the same conditions we had. I went up and I took this picture and I gave it to the newspapers. I do not know if they wrote up anything on it. I just notice now, a year later, they are starting to go around these posts.

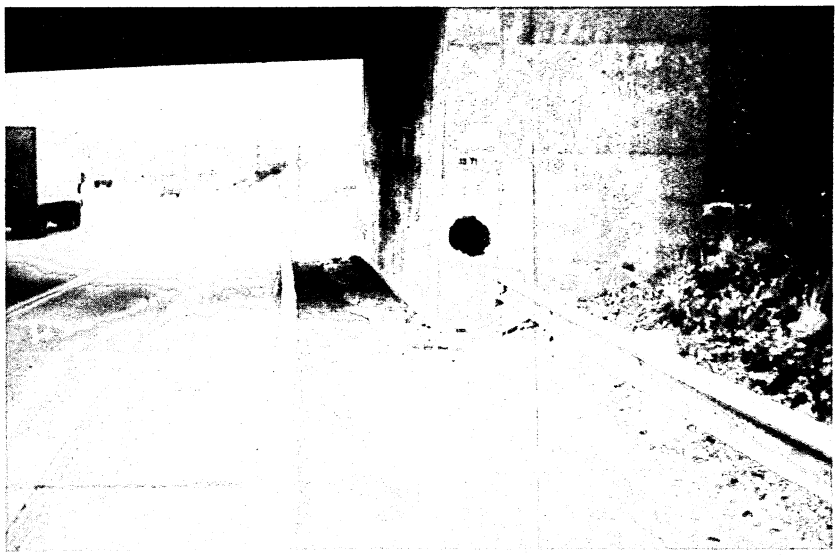
(At this point Mr. Johnson assumed the chair.)

Mr. LINKO. Here you see a bridge abutment that has been hit.

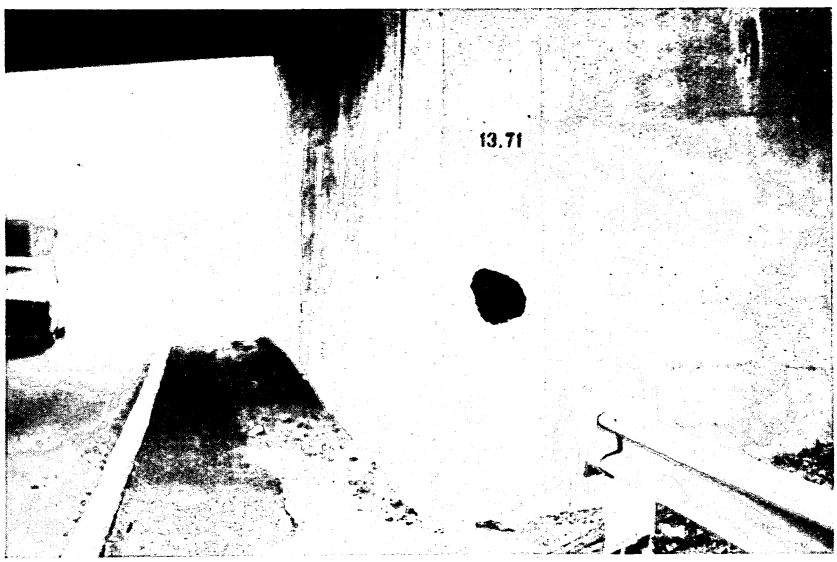


Here is what happened to the car. It is all smashed up and two girls died in there.

And here you see a guardrail installed wrong on the right-hand side. In the center barrier they had an excuse; they called it a center barrier so let's say the guy put it there. But here there is not any reason for this guardrail at all. They only reason it is there is to protect the bridge abutment. You can see it is guiding you right into the bridge abutment.

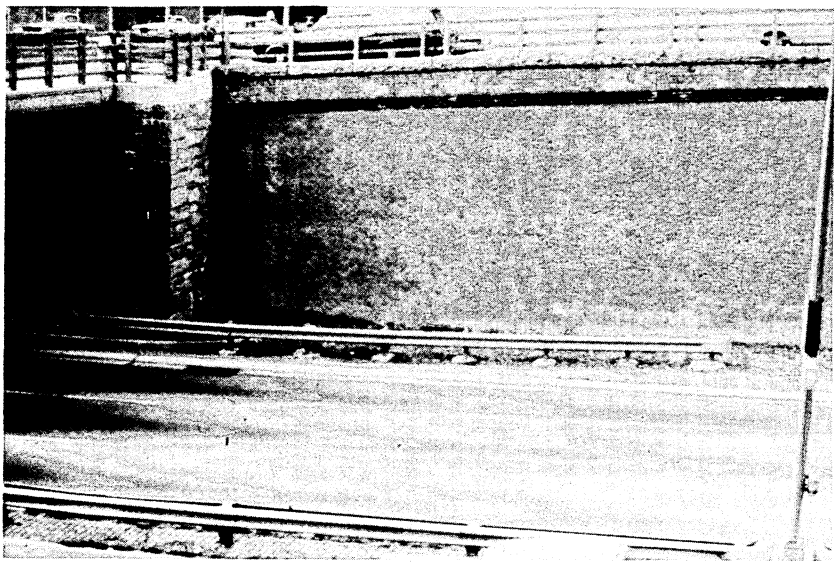


If you look close, you can see a scratch all along there, where a bumper hit this. They repaired it and put it right in the same place. This is wrong.



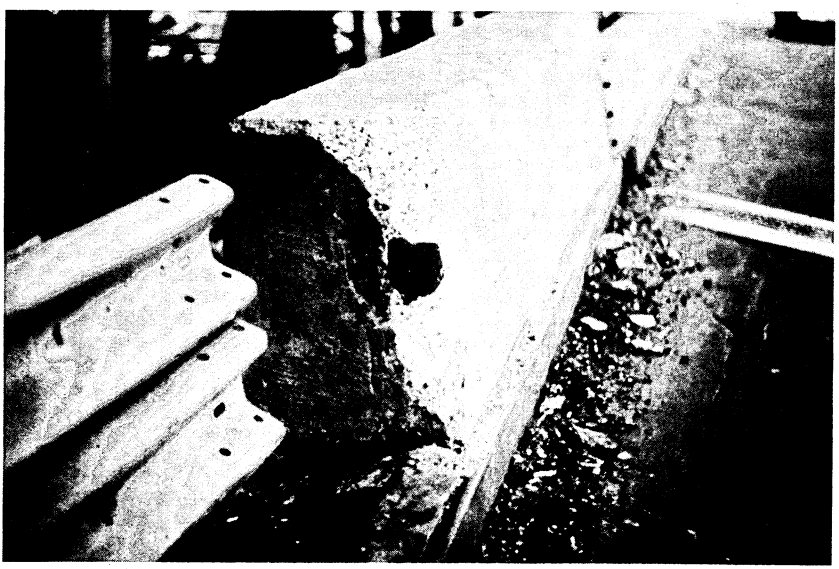
Mr. W. MAY. Again you make the point, if we made a mistake in the first instance and there is an accident, if we have an opportunity now to correct it, we should. But instead, we went back and put the guardrail exactly in the same position.

Mr. LINKO. This is the way it should be done. There is no reason to put a guardrail there not to serve a purpose. It is supposed to provide a sliding effect so that you slide right by the hazard.

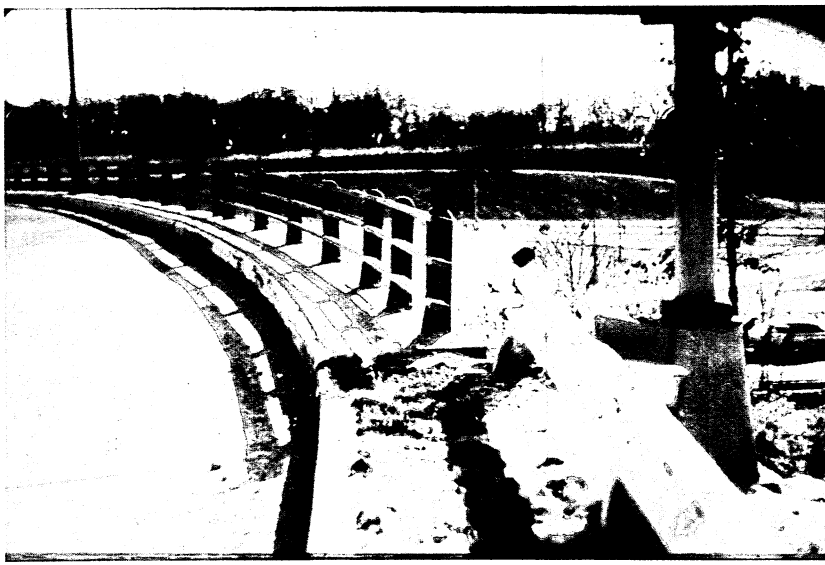


But this is what you will see all along our highways.

I have too many pictures to show you. I just brought a few. This is all unnecesssary damage. Many people got killed, other people got crippled for life—just because we failed to overlap this area.

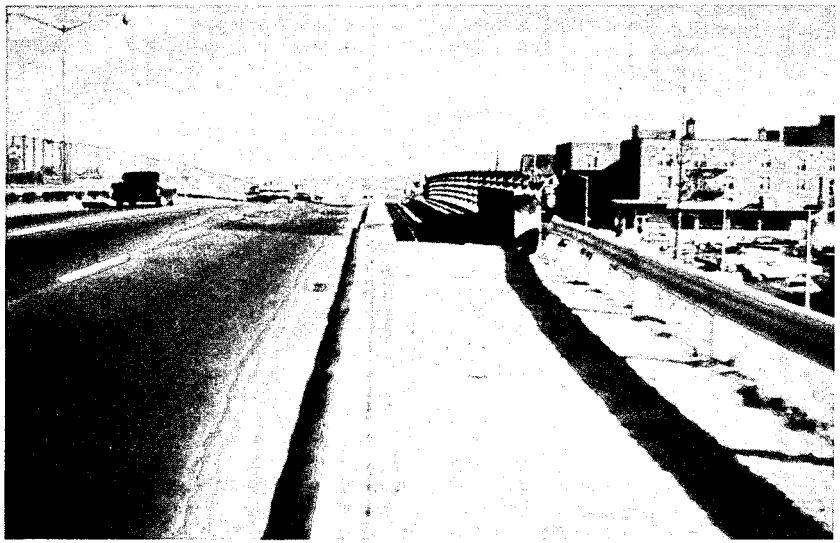


Everywhere you look you will see we failed to terminate these things properly.

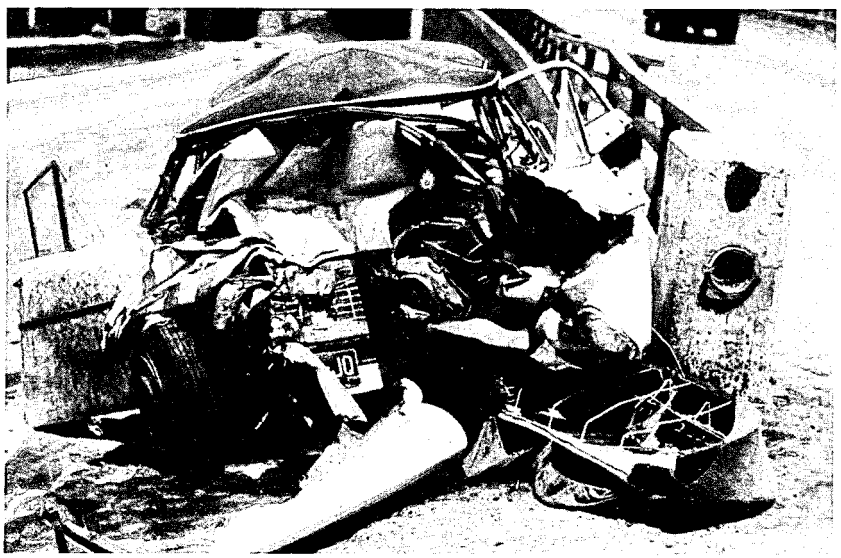


This particular rail originally was lined up with this abutment. But all you have to do is tap it a little and it will move in. Then it is exposed for the next person. By overlapping, it would be impossible for this to happen. You can use the strength of the bridge abutment to keep it from happening.

But many of our highways, many of our bridge abutments in my



area, the whole New York State Thruway, the New England Thruway, have these conditions. They are wrong and we have to go back and do the job over.



This is what happens when you go into something like this. This engine was pushed into the compartment and two people died here.

Mr. BLATNIK. You say two people died?

Mr. LINKO. Two young persons.

Mr. BLATNIK. The car, you see, was hit going forward.

Mr. LINKO. Yes, they turned the car around so it would not be in the way of traffic. But you can see the impression of the abutment on that car.

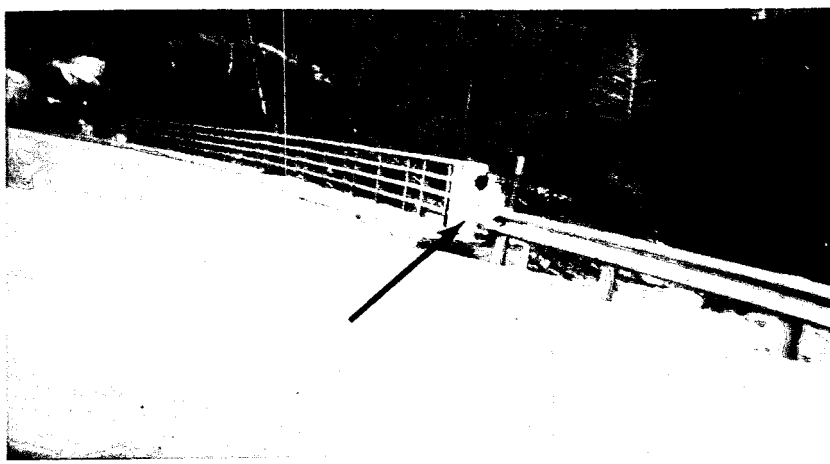
Mr. BLATNIK. The point of impact is the red dot?

Mr. LINKO. That is right.

Mr. BLATNIK. An obstruction like that will really stop you dead; really stop you cold.

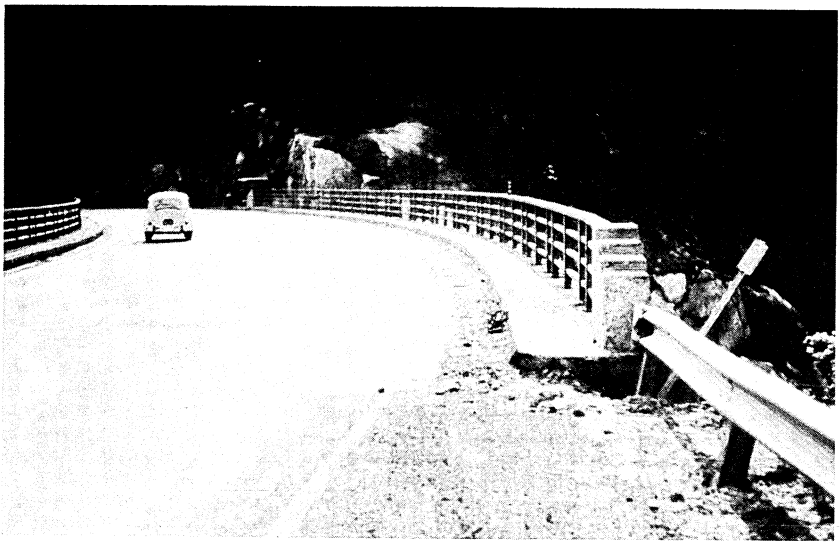
Mr. LINKO. Right, the engine is in the compartment, and two people died here.

This is a picture of a guardrail that was installed to line up with that abutment (circle) to begin with; but once you tap these things, they will all move over. They should be terminated. They should be terminated to the bridge abutment itself so that you can use the



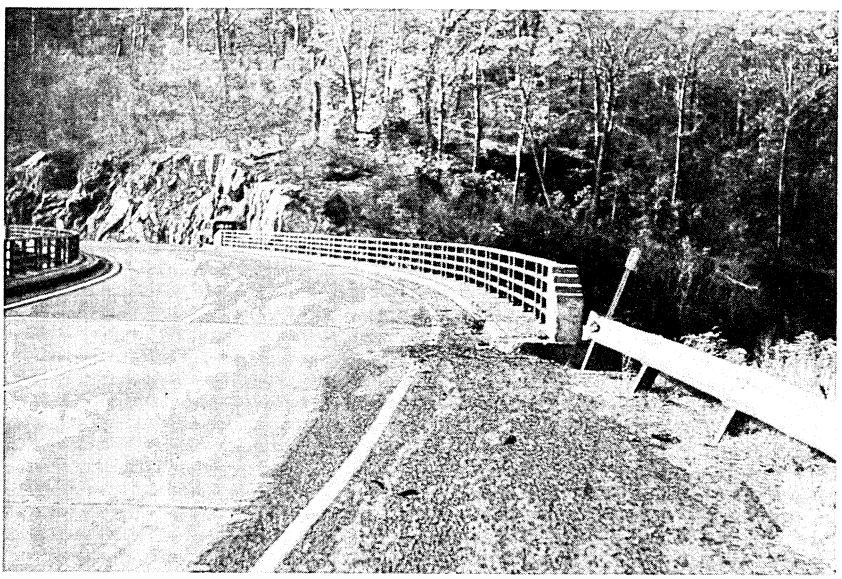
strength of that connection, you see. And all our highways in New York City are deficient in this way.

Now this is a picture I took 8 months prior to an accident. I saw someone was chipping away on this thing already.

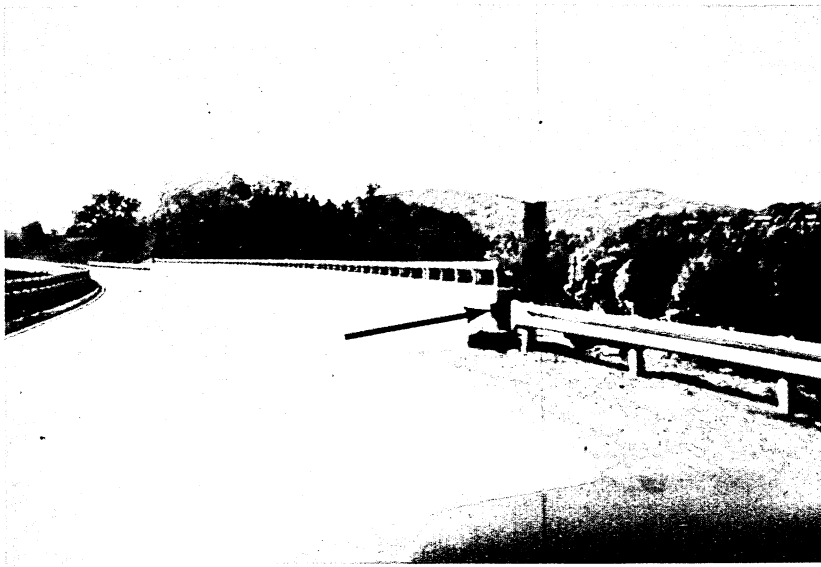


Here is the same scene. Three people died here.

Four days later, another person died here, in the exact location. They failed to do anything about the situation, so I wrote a letter to our Governor pointing out the deficiency.

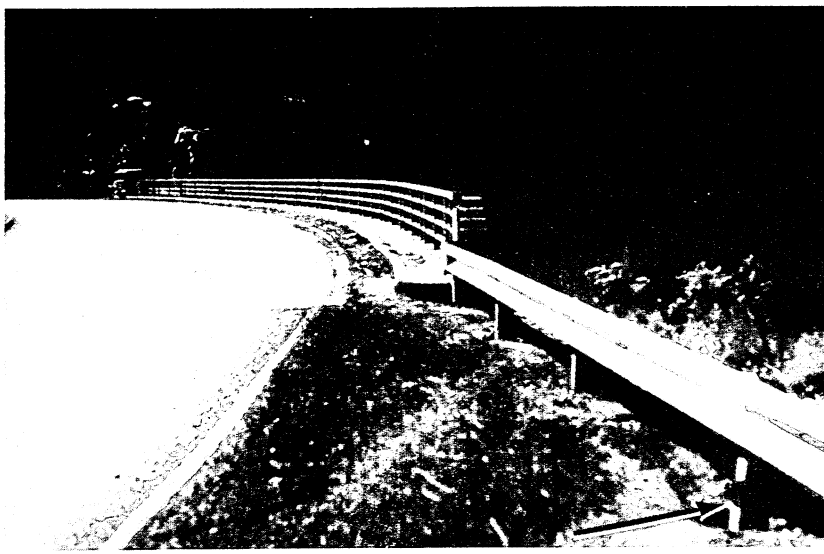


And at the same time as these people were getting killed at the former location, we were opening up brand new highways with this same "ideal" situation.



This highway was just opened up in November. The same thing will happen when a car hits this.

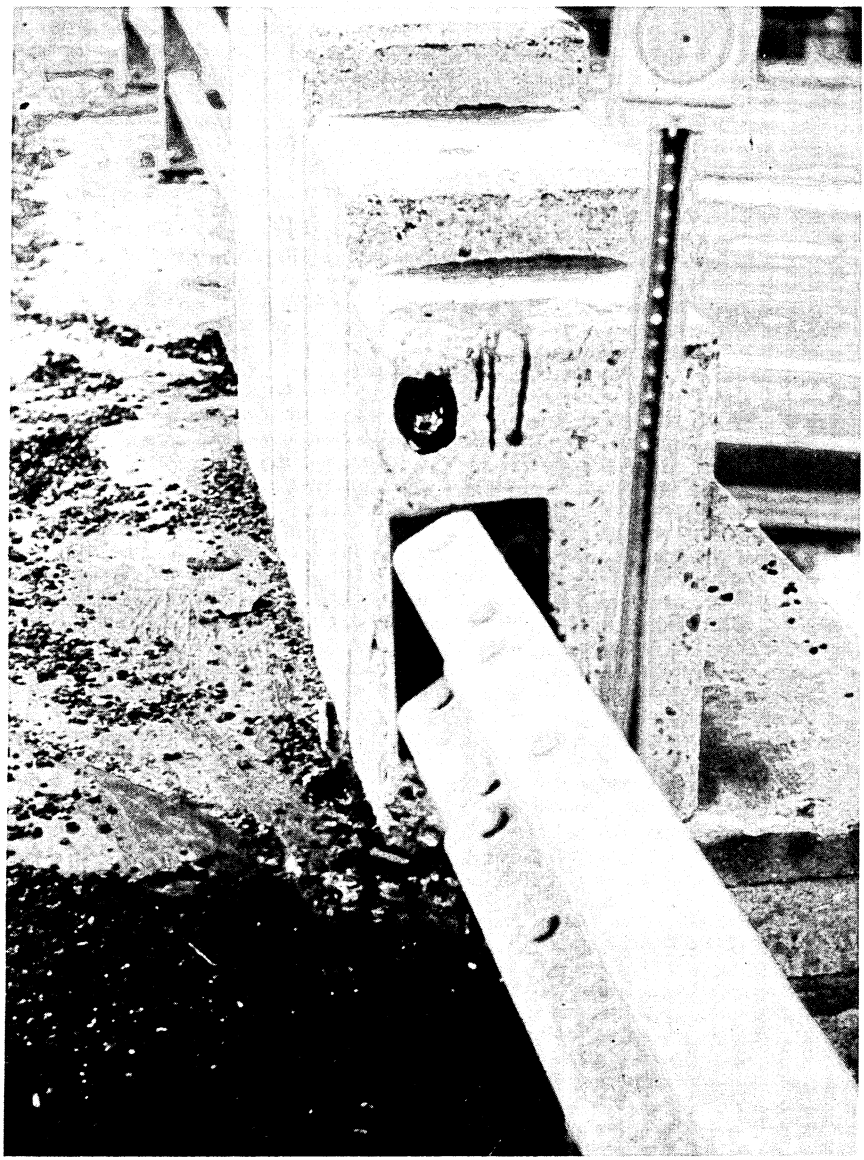
Now, I read a few books on this particular type of W-beam installation, and they say to terminate this thing and fasten it to the bridge abutment. This was put out years ago. And here we are opening up highways like this today.



The answer to this particular place where the people got killed was that they shoved another guardrail in there and they thought their responsibility was over. This is when I wrote a letter to the Governor. I went to this particular place after they repaired it and I shook this guardrail and it moved 6 inches back and forth. You can see where the mark is at the base of that I-beam, you can see a big hole there, and that part could be pushed back and forth also.

Mr. CLEVELAND. Is that curb in the previous slide at the base of the bridge abutment—the base of the bridge—that curb looks like 5 or 6 inches. Is that a hazard also?

Mr. LINKO. Yes; that is a hazard and it has been chopping up our cars. I noticed that after I wrote a letter to the Governor.



They made this correction. See, they did taper that curb there a little bit with some asphalt as they fastened this thing to the bridge.

Mr. BLATNIK. Will Mr. Cleveland yield for a moment?

Mr. CLEVELAND. Yes.

Mr. BLATNIK. We will come later to more examples of how hazardous this can be. And we will include some of the cases on Washington Memorial Highway, right along the Potomac. It would make it easier for the car to bump over the rail having two lower steps, so the wheels bounce to the first one, then bounce to the second one. It makes it a lot easier for a car to crash over the railing. We will have pictures of that, showing scenes of accidents that can happen just like that.

Mr. CLEVELAND. We will address ourselves then to the question of these curbs.

Mr. BLATNIK. Yes.

Mr. CLEVELAND. We have had ample pictures of where curbs have been dangerous.

Mr. BLATNIK. Right.

Mr. CLEVELAND. On the other hand, I suppose curbs do perform some functions.

Mr. BLATNIK. If they are high enough, we sort of skid along the highway. However, curbs help you bounce up, elevate you to bounce up one step or two steps, and give you a good crack at the railing. You can be sure to go over. Recoil action.

Mr. LINKO. Those curbs are hazardous and some of them are not 6 inches high; some are 6 and 12 inches high, and you do not even need to leave the roadway.

The guardrail guides you into those high curbs and you can blow out your tire. If you have your brakes on at that particular time, you can collapse your whole front end.

It is a serious matter. I asked the highway department to go back to all these points and do something similar to this; pour that asphalt there and give it long taper, maybe 2 or 3 feet, so you can ride up on that instead of blowing out your tire and running out of control.

Even this particular installation here is not recommended in the book that I read. They put out a special book on how to install a W-beam guardrail. They do not recommend this installation.

Mr. CLEVELAND. Mr. Chairman, while we are on that subject, taking the specific picture we have (fig. 1–91) and the specific bridge, I would like to ask you and Mr. Prisk—forgetting now about the part of the curb facing oncoming traffic, let's talk about the part of the curb parallel with it; is that curb performing a useful function? Mr. Prisk, would you comment on that? What is the purpose of that being raised, let's assume 6 inches, 5 or 6 inches?

Mr. PRISK. Sir; this wide curb has been known as a safety walk that is on the structure. It appears on some of our freeway-type facilities, even though pedestrians are prohibited from the freeways. So the only safety walk purpose you can possibly ascribe to this is for persons who maintain the structure, being able to walk and stay out of the traffic lanes.

The curb here is definitely exposed to traffic and is an added accident factor in a good many cases on bridge structures. New designs have done away with this type of walk. They are gradually being adopted.

Mr. CLEVELAND. In other words, the answer to my question is the curb no longer is recognized as performing a useful function?

Mr. PRISK. The wide curb—on a freeway facility; yes, sir.

Mr. CLEVELAND. Thank you.

Mr. BLATNIK. Mr. Linko, when did you first observe this? (Fig. 1–87.)

Mr. LINKO. I took this 8 months prior to the accident.

Mr. BLATNIK. In 1965 you noticed this and said this is a dangerous spot?

Mr. LINKO. That is right. It had been chipped off. I noticed the hazard there. It had been hit many times.

Mr. BLATNIK. You had no record of previous accidents, but there were scar marks?

Mr. LINKO. Right.

Mr. BLATNIK. What did you learn about any accidents subsequent to noting this as a potential hazard?

Mr. LINKO. You mean after I noted this?

Mr. BLATNIK. Yes.

Mr. LINKO. Right here—three people died here one day.

Mr. BLATNIK. That was when, last October, was it not?

Mr. LINKO. That is right.

Mr. BLATNIK. Was that a mother and little children who were killed?

Mr. LINKO. That is right. They ran into that abutment and wiped out everybody in the car. And 4 days later, at this same location, another person killed.

Mr. BLATNIK. Four days later?

Mr. LINKO. That is right. Another person got killed at this point.

Mr. BLATNIK. What happened to the other passengers? Three more were hospitalized?

Mr. LINKO. That is correct. It is a serious hazard.

Mr. CLEVELAND. For the record, can we be told where this particular bridge is located?

Mr. LINKO. Yes. This happens to be—if you are traveling west on Interstate 287, this is the entrance ramp to the New York State Thruway, and it is a sharp turn. A lot of people never get past this particular place.

If this guardrail were installed properly and secured to the bridge abutment, a car would slide by, and continue on its way. But when you touch this guardrail, the way it is, it just moves back and you hit the abutment head on. That is because they failed to install the guardrail properly.

I would like to say again, all our guardrails are like this. This is not an isolated thing. On the New England Thruway, New York Thruway, and all the brandnew highways we are building today, they are exactly the same.

Mr. W. MAY. Here is a location where you have had several deaths, a series of accidents, and they finally make a correction and they put some cold mix there in front of the curb, tapering the curb. Now they make this kind of attachment to the bridge end post. Mr. Prisk, is that a proper installation? (Fig. 1–92.)

Mr. PRISK. No; this is not a full correction, certainly. It is an improvement over what you saw in the early picture, but it is not a proper correction.

Contraction of these guardrails will probably pull that installation loose in cold weather under normal conditions, and so you no longer have the anchorage that is shown. That would be my judgment.

Mr. CLEVELAND. Mr. Chairman, may I ask a question in this regard?

Mr. JOHNSON. Mr. Cleveland.

Mr. CLEVELAND. The concrete abutment with the mark on it, is that serving any functional purpose so far as the bridge is concerned?

Mr. PRISK. No. This is the principal weak point in the situation Mr. Linko is describing, the transition between the post guardrail and the rail you find on the bridge structure itself. In most cases that block of concrete could be cut off at its base and lifted away from the bridge and nothing would happen. The bridge would not fall down. It serves no real function except to ornament the bridge and to introduce an obstacle to a smooth transition between the approach protection afforded by the guardrail and the protection afforded by the rail on the bridge.

Mr. CLEVELAND. Mr. Prisk, actually what you are saying, then, the rails along the bridge should extend with the same material to the same height and same design into the guardrails that will be on the edge of the road; is that not the answer?

Mr. PRISK. Not necessarily the same material, but you want smooth continuity in the traffic face of the rail, both on the approach and on the bridge.

Mr. CLEVELAND. Let me ask you another question. With all due respect to my colleague from New York, Mr. McCarthy, who put in a word for the concrete people, let me put in a word for the forest products industry.

Would it not be safer if that particular installation we are looking at were made of wood? Would that not give at least the traveler a fighting chance if it would break off?

Mr. PRISK. I think I would like to pass on that. Wood can be pretty solid, too. I think it is inappropriate for this use.

Mr. CLEVELAND. Are there any studies on this, the advantage of steel and concrete as opposed to wood? In some parts of the country we do use wood with just metal shields for guardrails. Is there a reason for this?

Mr. PRISK. I was talking about the end wall of the parapet on the structure itself. The abutment is directly underneath that block of concrete as it stands between the approach guardrail and the rail on the bridge. I never have seen a modern bridge construction—that is, concrete or steel bridge—where wood has been used at that location.

Mr. CRAMER. Could I ask, Mr. Prisk, what are those four concrete stanchions (fig. 1–88) supposed to accomplish at the end of the bridge railing?

Mr. PRISK. The block?

Mr. CRAMER. The block of concrete. Not one block but all four of them—lines on one, or whatever it is. What is it supposed to accomplish?

Mr. PRISK. You mean these four panels?

Mr. CRAMER. Yes.

Mr. PRISK. That is all poured as one monolithic structure. It is one solid wall, with panel ornamentation by the bridge engineer and the

architect, to apply their skills—esthetic considerations to ornament the bridge.

Mr. CRAMER. So we have here another instance of esthetics or beautification, if you want to call it that, being the primary consideration, apparently largely to the exclusion of safety consideration. This could be compared to planting trees in the right-of-way, is that correct?

Should there not be some mode of welding together in the form of planning whatever engineering esthetics are advisable and the safety hazards that might result?

Mr. PRISK. I would agree.

Mr. CRAMER. These clearly indicate there is just no coordination between the esthetic aspects and the safety aspects?

Mr. PRISK. I doubt that the author of that design would agree, but I agree with you.

Mr. CRAMER. We can only judge it by the results. People are getting killed here.

Mr. PRISK. Right.

Mr. W. MAY. Mr. Congressman, you would be interested to know the staff has talked to bridge engineers and asked them what is the purpose of the end post. The answer is there is no purpose. It serves no function.

Mr. CRAMER. Well, it looks pretty and costs money.

Mr. W. MAY. There are times we could put the date on it. But you notice it is like a tombstone.

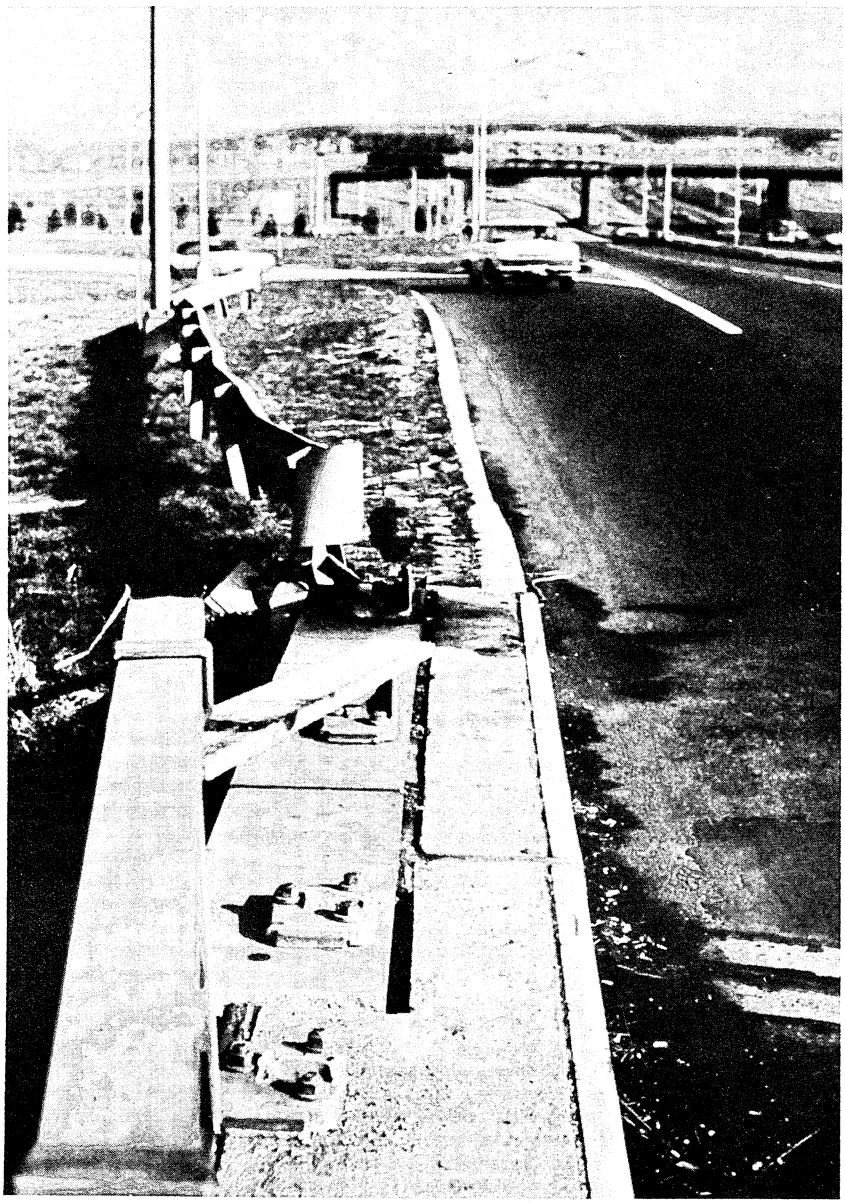
Mr. CRAMER. It looks pretty, costs money, and kills people.

Mr. LINKO. Here you see a guardrail installed improperly also. Instead of letting you slide by here, you can hit the abutment head on.

Mr. W. MAY. Again, here is a case of a failure to carry the structure—the bridge narrows down and this is how they handled that particular offset.

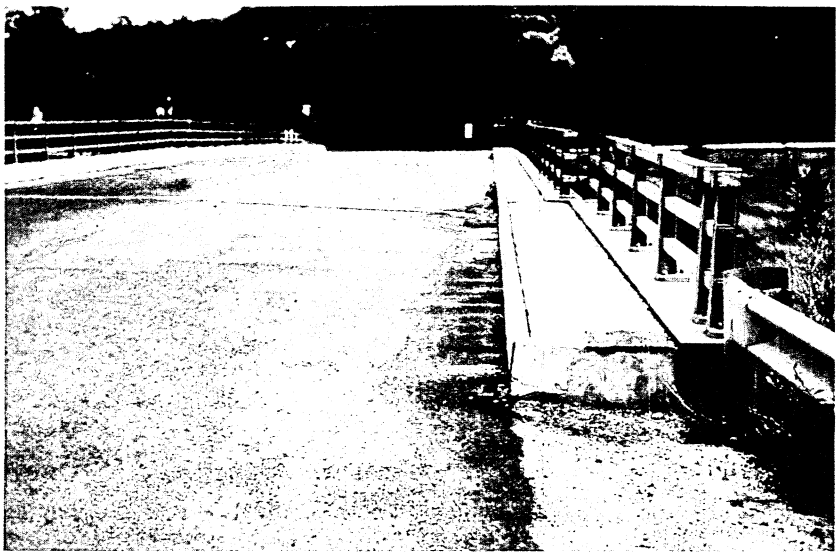
Mr. LINKO. Because it was installed improperly, this guy hit it. There were only 2 inches sticking out. You can see he just smashed into the concrete wall.

Here is another place where a fellow caught the corner and wrecked the bridge, because we failed to terminate, or go around. Where a guy would get a scratched fender, he has to wreck his car.



Here is the guardrail referred to a few minutes ago. This is a 10- to 12-inch curb. Anyone sliding along the guardrail is going to come to a complete stop. If he has his brake on, he will completely ruin his car—for no good reason at all.

This is a new bridge, recently installed. This is standard practice in New York State. They have these curbs on every bridge and still have not changed.



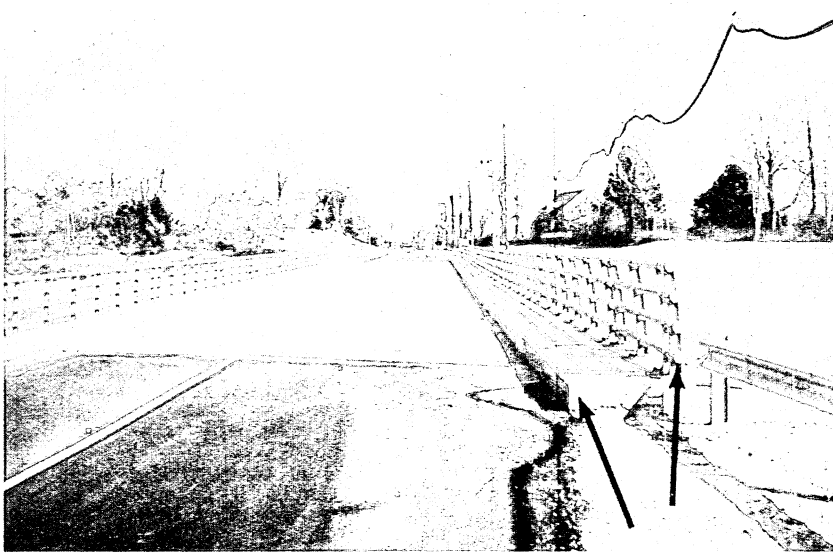
Here you see them in the process of building. This is recently built. These things were brought to the attention of the Bureau of Public Roads and the State.

Mr. BLATNIK. I am sorry, you say this is a brand new road being constructed?

Mr. LINKO. Right.

Mr. BLATNIK. Not even in use yet?

Mr. LINKO. No.



Mr. W. MAY. They did not put a bridge and post on this one.

Mr. LINKO. No, but that can cut you in half, too, because it is set back.

Mr. W. MAY. Yes.

Mr. LINKO. Here is a case where they removed the high curb, but the guardrail is set behind the bridge abutment, you see.

Now you have the material to do the job properly, but it is not installed properly, so all these unnecessary accidents at these points are really not necessary.

Now here you see the guardrail set in front of the curb allowing you to go right through.

There are only two places like this I have seen in the whole State and I feel this is done right. But the only reason they did this was because they could not back it up. There is a sharp slope there. It was not done on purpose. [Laughter.]

Mr. BLATNIK. Do you mean it happened by accident, by circumstances, and not by planning or design?

Mr. LINKO. That is right. You can see anyone sliding along that guardrail has a chance of scraping his fender instead of wrecking his car.

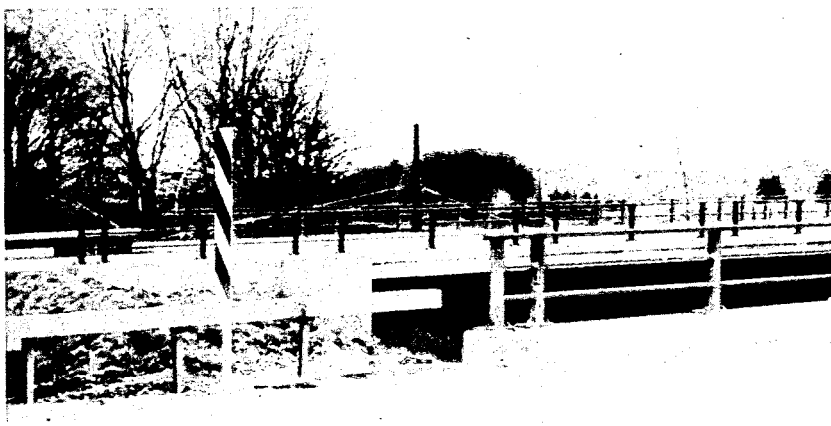
Mr. CRAMER. They avoided accidents only by accident?

Mr. LINKO. That is correct. I recommended to Mr. Prisk and Mr. Kopecky in order to prevent this misalinement of guardrails—as you see, they are doing it every day—to make it mandatory to overlap the hazard. And if you have a high curb, you should overlap the high curb also. This way you cannot make a mistake, you see. All you have to do is overlap it and fasten it and it is impossible to do the job wrong.

If you have got that mandatory clause in there, they will set it back behind the guardrail. That is a simple solution.

Even in this particular case, I do not agree this is right, you see, because this can still be pushed back because it is not fastened to the curb. But if you overlap it, then you cannot make a mistake.

A simple rule like this can prevent all this unnecessary wrong installation.

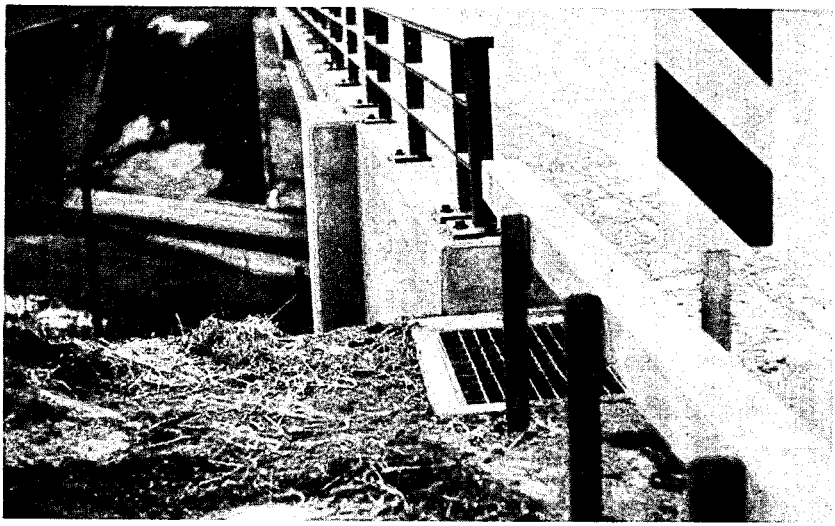


This is a brand new rail developed and one of the newest highways we have got, just opened up, this is what you will see.

The high curb is there. The rail end is not secured to the bridge railing. In fact, this type of railing, if you hit it, is designed to flip off the posts and would not serve any purpose at all. Any truck that hits this, it will just fly off, because it is not bolted actually with strong bolts. It is supposed to be anchored on both ends in order to realize the basic functions of this guardrail.

Here is another view showing you the back installation of it.

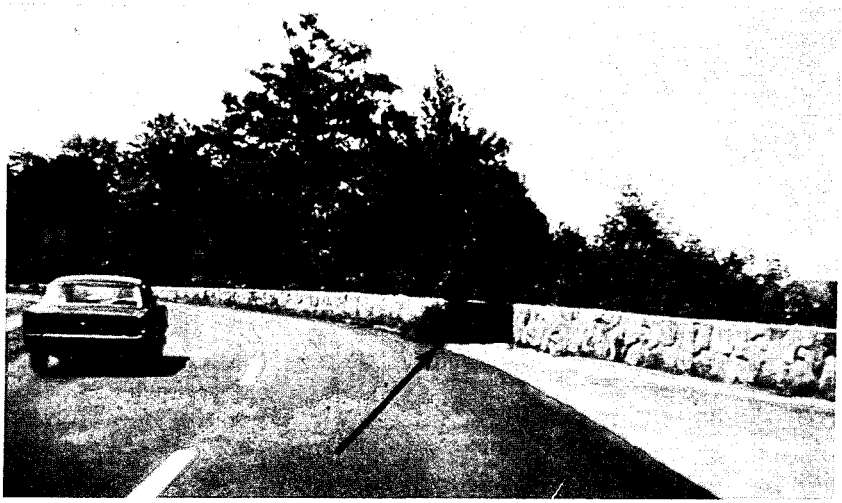
Mr. W. MAY. Mr. Chairman, we may remember this slide and use it later in the hearings.



New York has developed a find brand new guardrail. It seems to work very well. There is a lot of merit to it. This is called a weak-post approach. If that guardrail is hit, the post gives way easily. This can only perform if the beam is properly anchored. It is not properly anchored in this picture. It is a brand new installation and it is not properly installed. That will give way much easier than the standard W-beam rail and the car would crash into that bridge abutment.

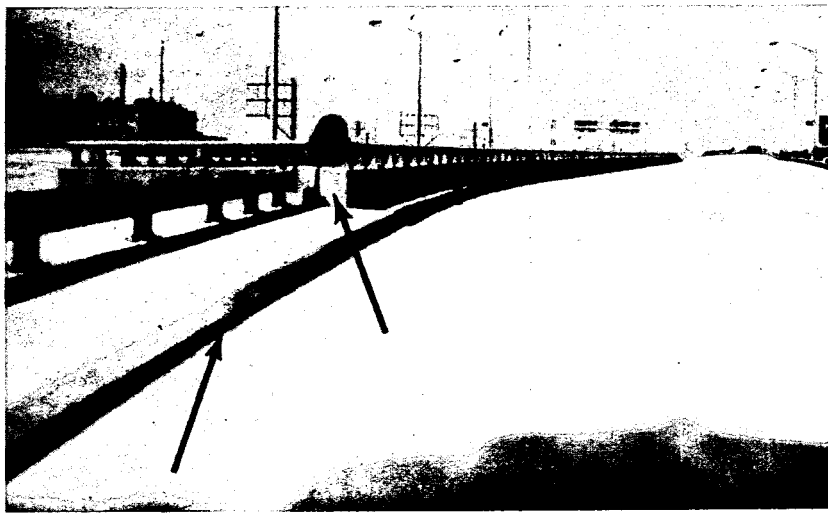
Mr. LINKO. So you see, our brand new highways, with all the information we have from the past, we are still building them wrong.

And now we are getting a series of offsets, you see. I have documented these to point out and prove that we are building these on purpose and not by accident.



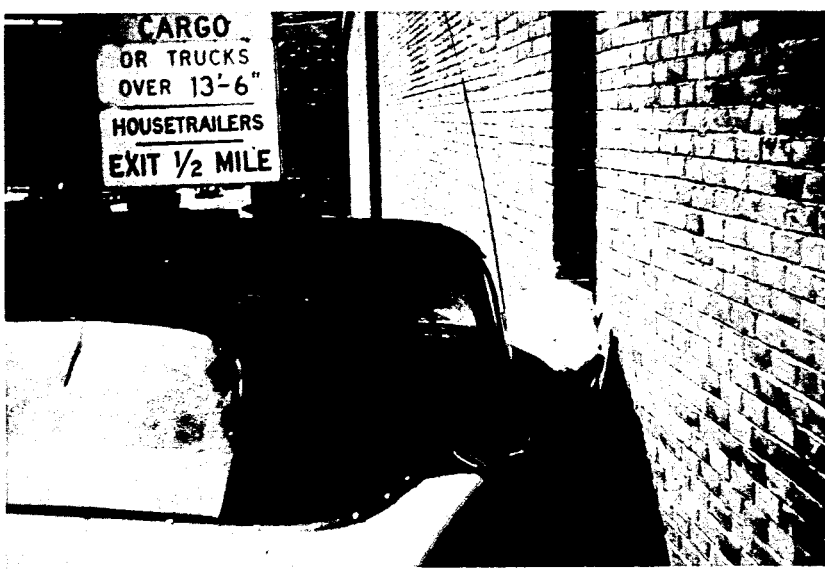
All these offsets are built for beauty, because they have a dark shadow, you see. I am for beauty, but not at these particular locations. And we can see anybody coming around this turn who slides into this thing would be stopped dead. If he had a full load of passengers, they have to go with him.

I am going to show you a series of shots, but they all point out the same thing.



Here you can see they tapered the curb off easy so you can get up on there and slide into that guardrail. [Laughter.]

Here you can see even 6 inches can grab a car. It does not look like it can do much damage, but you can see it smashed up this car unnecessarily.



Here is the front view. We have thousands of these offsets.

Mr. W. MAY. That is not your car? [Laughter.]

Mr. LINKO. No. I wish I had one like it. I only have a 1953 Willys.

And you can see that we should outlaw any offsets against traffic regardless of how small they are.

Here you see a guardrail installed improperly. They are supposed to be overlapped toward the traffic, but someone put it on backward. Even that one-eighth of an inch caught the car, you see. This is not an exaggeration.

Mr. W. MAY. I think it is important, we just saw from a slide, 6 inches can stop a car, and here just less than an inch.

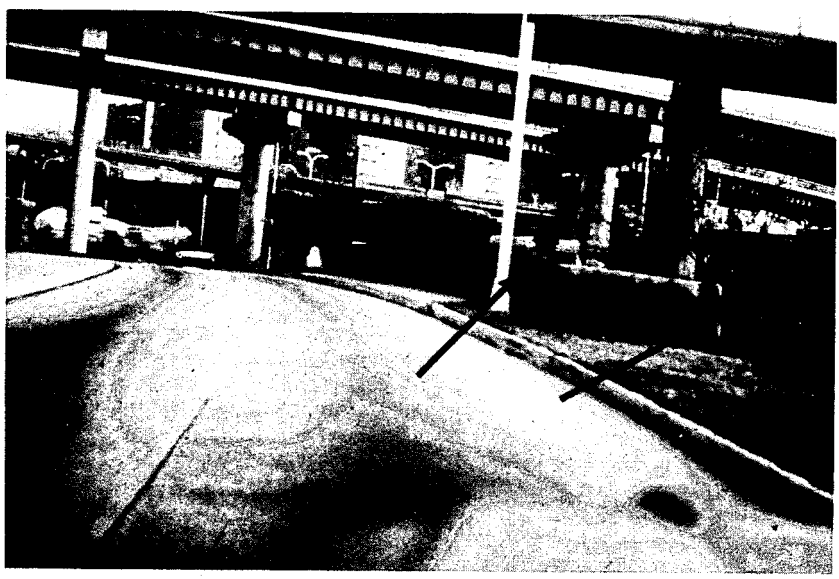
How should this be done, Mr. Prisk. The overlapping should be laid the other direction?

Mr. PRISK. The overlapping always should be so the following rail downstream would be behind the one upstream.

Mr. W. MAY. Thank you.

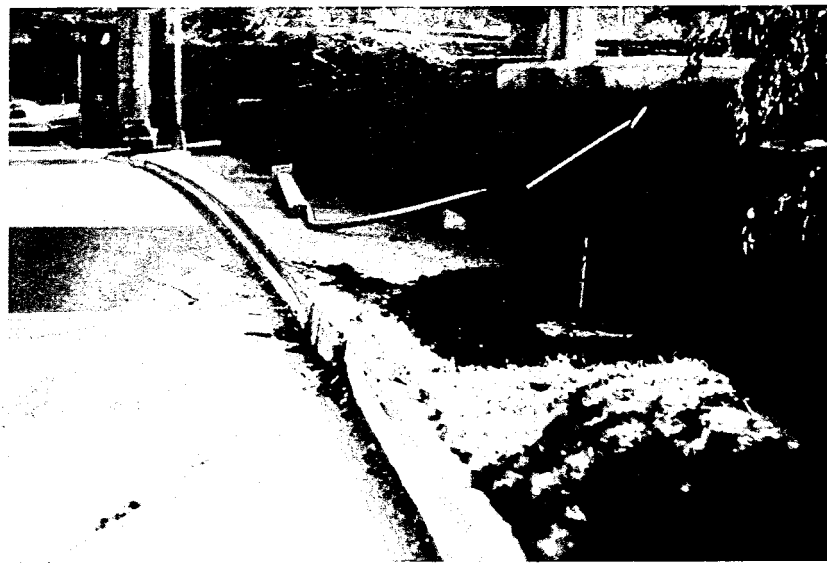
Mr. LINKO. Here is a series of shots showing the second offset. Not only do we have the first bridge abutment, but we built the second offset. I am pointing these out.

Here is a particular location I photographed prior to an accident, and even though it has some protection, I felt it was unnecessary to have the second offset.



When Mr. Kopecky came down to see me, we noticed this condition. The light was down and the mark is on that second offset.

We took a look at the car which is farther down, and this is what we saw.



He did not get that from knocking down the light post.

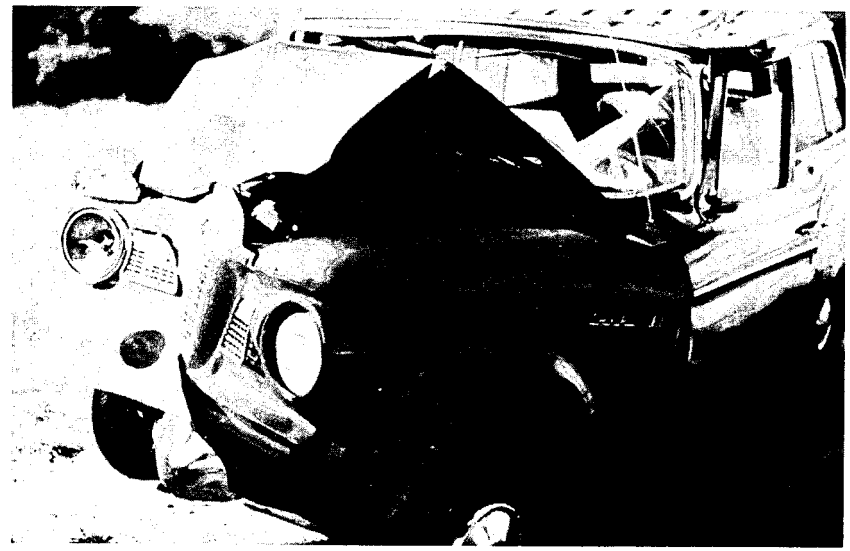
And here is another shot of the same thing showing the glass was broken; somebody went through it.

Mr. BLATNIK. Do you know what caused the automobile to go off the highway?

Mr. LINKO. It could have been anything—lighting a cigarette or somebody might have shoved him over.

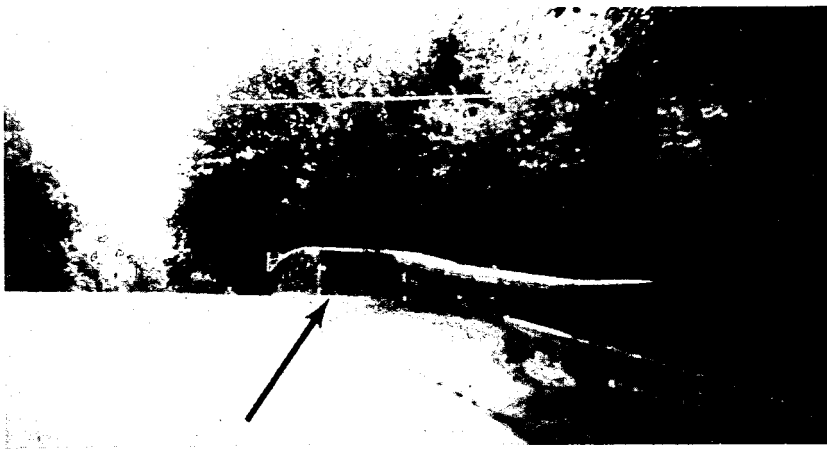
Mr. BLATNIK. At any rate, he did slide over. He would have had some chance of recovery if the walls were flat.

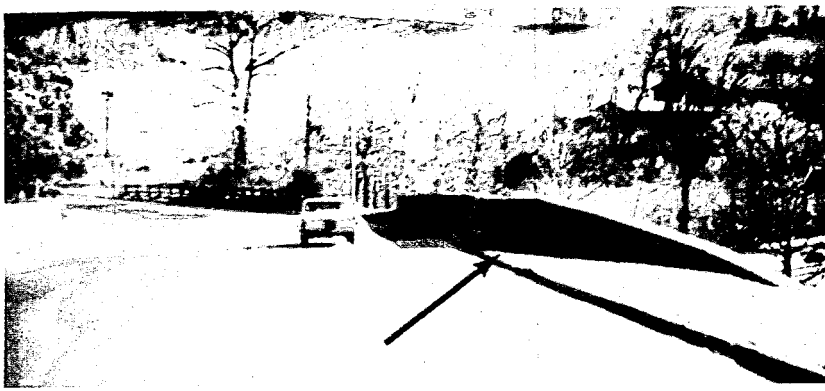
Mr. LINKO. That is right.

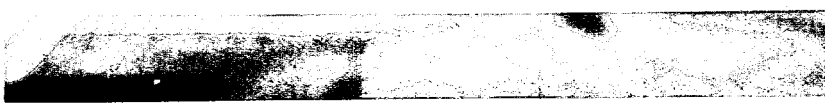


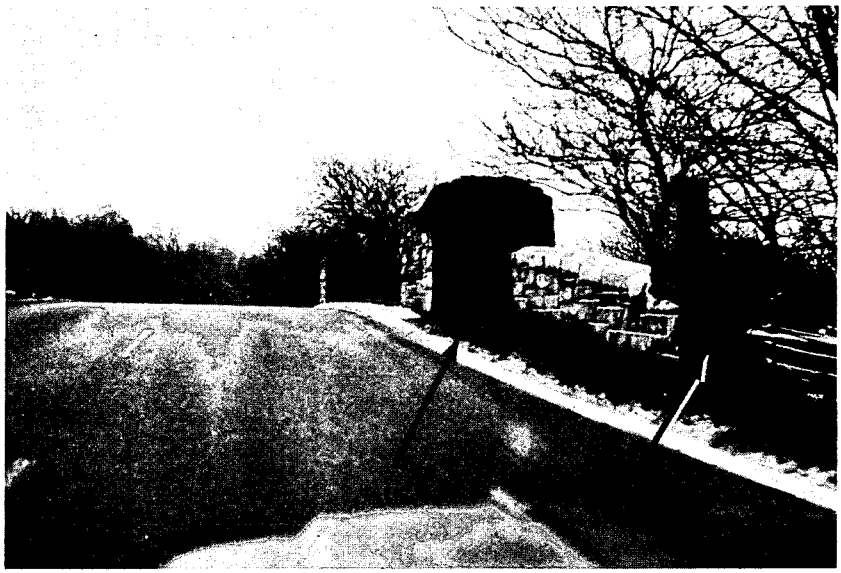
Mr. BLATNIK. Fortunately he missed the first obstruction and your point is that if the wall were straight or smooth, he would have had a good chance of glancing——

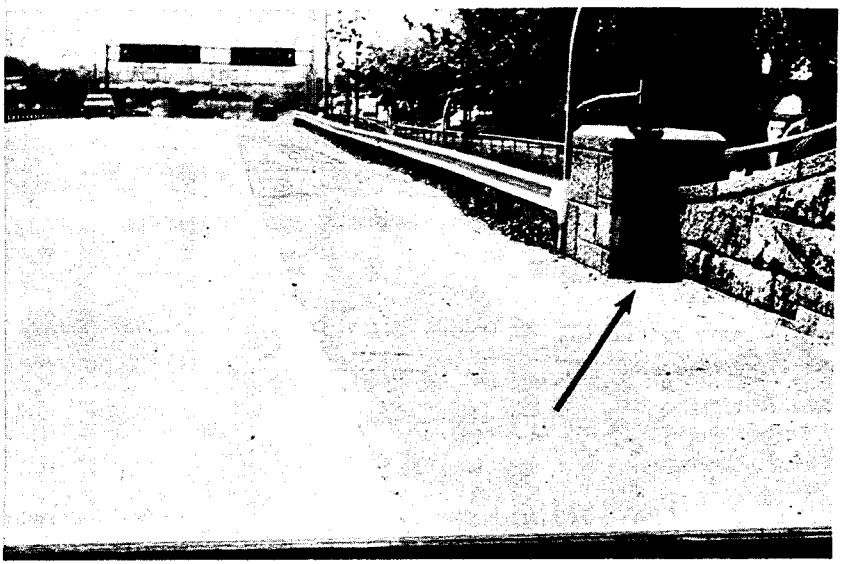
Mr. LINKO. That is right. The light pole would scratch this car. I have a series of shots on this point:











Mr. W. MAY. Mr. Linko, I think we can make another point here. How high is that one curb? (Fig. 1–108.)

Mr. LINKO. It is a 9-inch curb and you cannot depend on cars keeping on the ground.

Mr. W. MAY. That is the point. You cannot hide behind a 9-inch curb and expect it to stop the automobile.

Mr. LINKO. We have been doing that in many cases. Mostly we have no curbs at all. You could be traveling along 50 miles an hour and deviate just 10 inches out of the highway and you can be put out of your misery.

Mr. CRAMER. May I ask a question of Mr. Prisk. These are mighty pretty bridges. It looks like they may be also rather dangerous. Mr. Prisk, who is responsible, representing the Bureau, for review of plans for bridges?

Mr. PRISK. The responsibility for review of bridges done in our Washington office is with the head of our Bridge Division, Mr. Wilkes by name. The responsibility for all of this work, though, in a direct sense, is vested in our division engineer organization, one division engineer in each State.

Mr. CRAMER. Now, do those division engineers in the State actually review the engineering plans for bridge structures, such as these?

Mr. PRISK. Yes, with the help of their staff.

Mr. CRAMER. Have they been instructed to consider those designs not only as to esthetics and beauty, but as to safety as well?

Mr. PRISK. In a general sense, they have, yes.

Mr. CRAMER. Why have they not been doing it?

Mr. PRISK. That is a better question than I can answer in detail, but they are busy men.

Mr. CRAMER. Now, I think, again, Mr. Chairman, the effect of the Bureau's reorganization should be inquired into by this committee. You have division offices and regional offices that are not going to be changed as to their makeup and we should inquire as to who may report to whom, to determine whether this is going to facilitate or further hamper such review. And it is my opinion that adding another layer of supervision could easily hamper rather than help the review process, from the standpoint of safety as well as esthetics.

It is rather surprising to me, rather shocking, that these bridge abutments and other things have not been reviewed by the division offices, or by the States for that matter, from the standpoint of safety as well as esthetics.

It looks like esthetics and beauty have had the upper hand.

Mr. MCCARTHY. Will the gentleman yield?

Mr. CRAMER. Would you care to comment on that, Mr. Prisk? Then I will be glad to yield to the distinguished gentleman from New York.

Mr. PRISK. Yes, I would say, not being acquainted with the site of these bridges, it is impossible to say whether these cases, one or any one of them, are part of the Federal-aid program.

Mr. CRAMER. I assume some of them are.

Mr. LINKO. I have some here, sir.

Mr. PRISK. Beyond that, I think bridge engineers have been concerned additionally with holding costs to a minimum. And in that connection, you tend to end up with a structure that may have minimum standards, unless safety is given paramount emphasis.

Mr. CRAMER. I will be glad to yield.

Mr. MCCARTHY. I thank the gentleman from Florida.

I am a little surprised at the gentleman from Florida, for whom I have the greatest admiration——

Mr. CRAMER. I did not intend to yield for that purpose. [Laughter.] Go ahead and say what you have to say.

Mr. McCarthy. I wonder if the stress we are putting on the approval authority of the Bureau of Public Roads is in focus? It seems to me we brought out yesterday that the first responsibility for construction of safe bridges and safe light poles and all the rest starts with the States.

Is the gentleman suggesting this is solely a Federal responsibility?

Mr. Cramer. Oh, the gentleman knows I would not suggest any such thing. This is a partnership program and I am sure the gentleman knows I have discussed it as a partnership program ever since I have been on this committee.

But I call the gentleman's attention to the fact that the act we passed in 1966—section 402 of the Highway Safety Act—required that uniform standards be promulgated by the Secretary relating to highway design as it affects safety.

I think it is about time to get down to doing that job.

Secondly, the Bureau has traditionally and always, through the regional offices, reviewed, and the law gives them the right to review—the obligation to review—the plans of the States to make sure that they conform to minimum standards.

My point is, if you are going to have standards relating to esthetics which we have seen much evidence of in these pictures, we likewise should give at least equal consideration to safety, which apparently has not been done.

Now, if the gentleman wants to take issue with that position, I would be delighted for him to do so.

Mr. Blatnik. Can we get back to a more orderly procedure? This is a very important point and we will get into that later. We will see more presentations and get into discussion of why this happened, why has it gone on for so long and what should be done. This is a little premature to get into but the point can be raised, of course, and it has been raised yesterday and again today.

If we can proceed with the presentation of these slides, we would have an orderly volume of testimony of record before us.

Mr. Cramer. I felt Mr. Prisk was here for the purpose of giving us some idea as to how these things have been happening in the past and the reason for it.

Mr. Blatnik. He will continue to be with us through all the hearings.

Mr. Cramer. And for the further information of the gentleman from New York, section 109 of the basic law—title 23, United States Code—has been there for many, many years and it specifically says: "The Secretary shall not approve plans and specifications for proposed projects on any Federal-aid system if they fail to provide for a facility, (1) that will adequately meet existing and probable future traffic needs in a manner conducive to safety"—"safety"; that is what it says, specifically "safety"—as well as "durability and economy of maintenance."

My point is that this evidences that safety has been downgraded and esthetics and other considerations, beautification, have been upgraded, despite this basic requirement in the law.

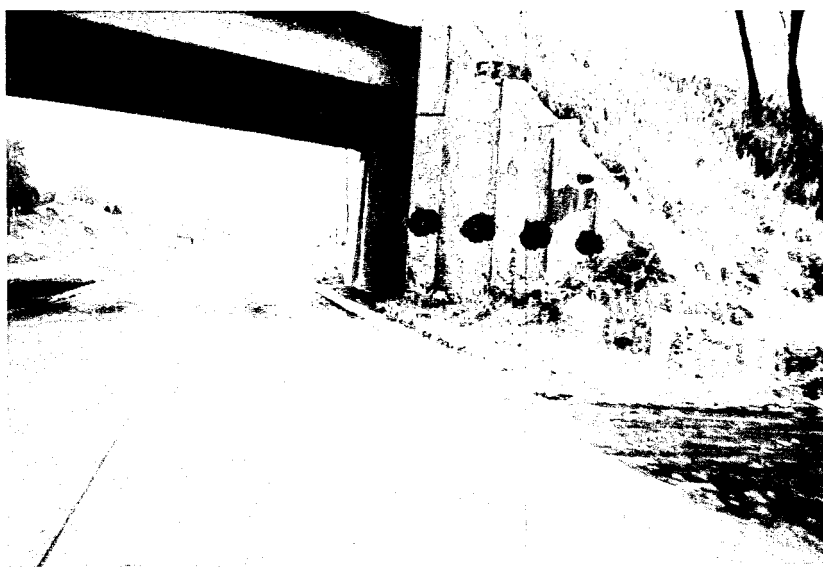
That is all I have, Mr. Chairman.

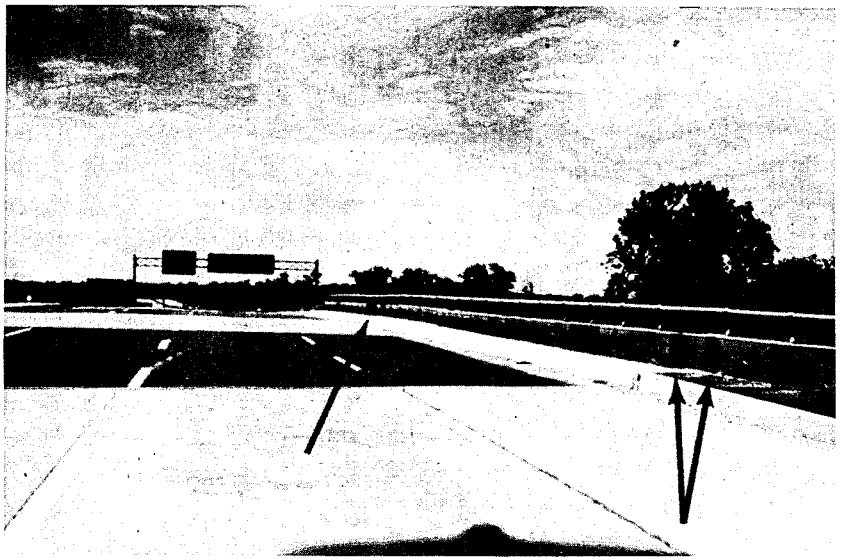
Mr. Linko. Now, this particular car hit that abutment that you see in the background. Instead of getting a scratched fender, it cut off a lot of his car.

This is happening, a little here and a little there; but nobody seems to group these things together. I put them all together and I hope it shocks this committee so we can get some action to phasing out these unnecessary offsets.

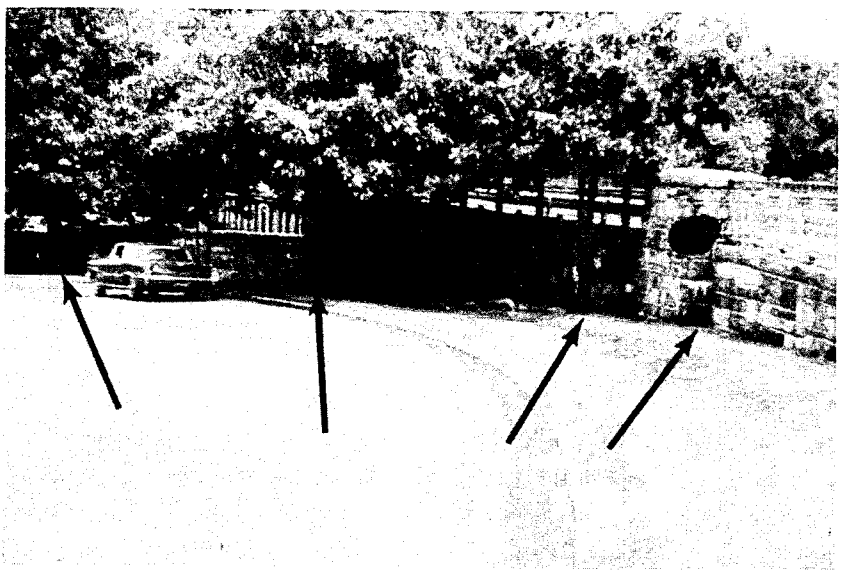
Here you see the State of New York is making these things smaller and smaller. They are realizing their mistakes, but they will not give in. They are diehards. Here you can see they are making them smaller and smaller.

Now, I pointed out how even a 6-inch offset poses an unnecessary hazard. They have it down to 6 inches here.





And here you see many, many hazards, not only the first offset, but you have the second, third, and fourth. Every one of these things is a hazard.



Here you see this is an obstacle course. You have to go by three trees, a lightpole, the first abutment and they put a second abutment before you leave. There is something wrong to have conditions like this. The worst possible place to put it is on a turn.

Mr. McEwen. Is there any reason engineeringly why the lamp posts at that location could not be put back of the rail on the bridge? The barrier?

Mr. Blatnik. Or on top?

Mr. McEwen. Or on top.

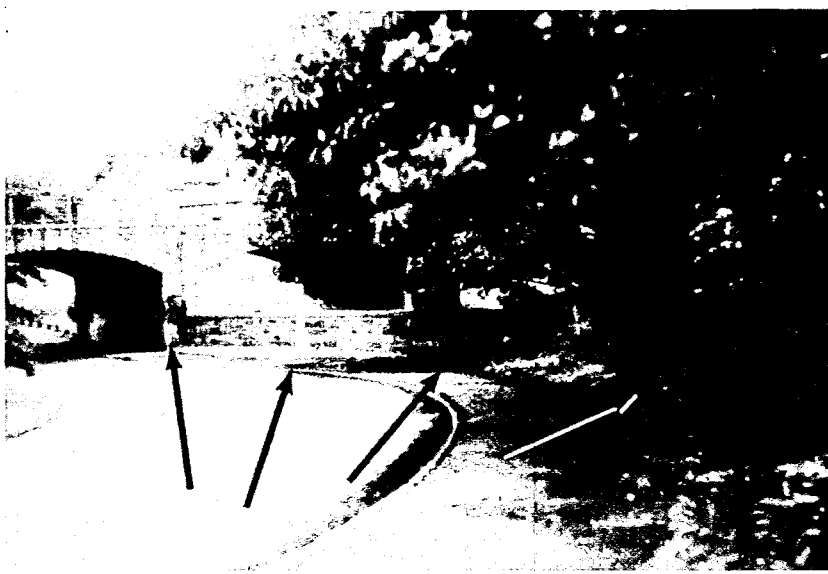
Mr. W. May. Mr. Prisk?

Mr. Prisk. The light distribution on a wide roadway, as I think I remarked yesterday, depends a good bit on the characteristics of the luminaire; but I would judge with a 6- or 8-foot sidewalk, as that seems to be, it would be possible to design a light standard that could be mounted in line with the wall, yes.

Mr. McEwen. In other words, it would simply mean that as the pole extends up, the horizontal section would have to be a little longer; is that correct?

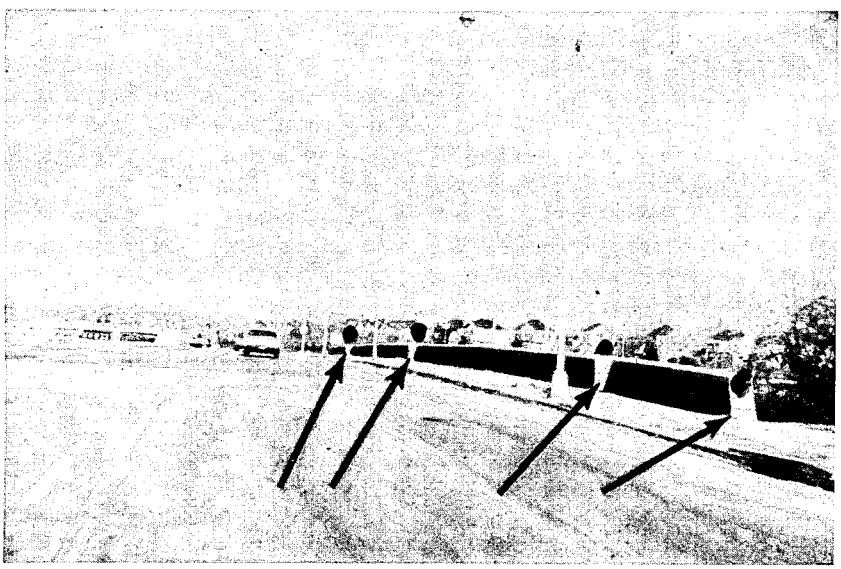
Mr. Prisk. That is correct.

Mr. McEwen. Thank you.

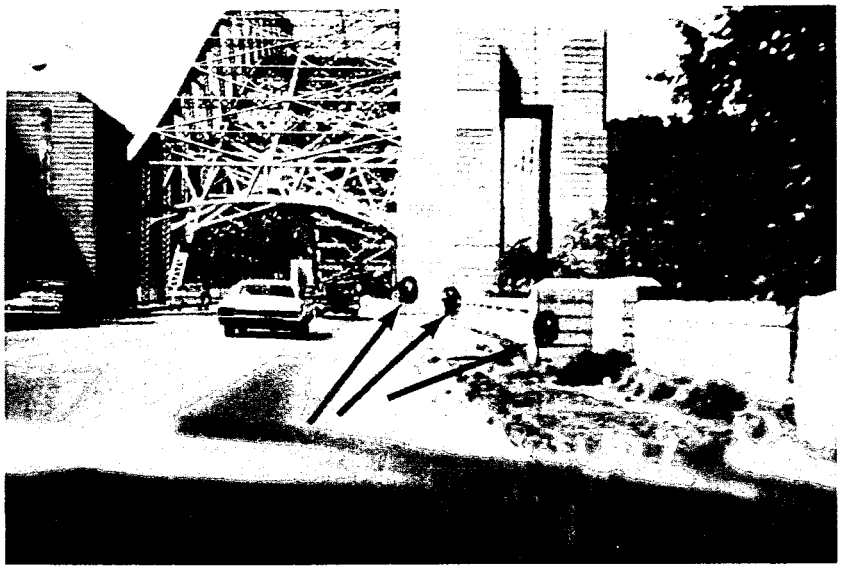


Mr. LINKO. Here you even see the rock outcrops. When they made this particular job, they had to blast a lot of rock and take it away and it may have been possible to fill in these offsets to provide a smooth road without spending an excessive amount of extra money. The point I am trying to bring out here is nobody is thinking about these offsets. Evidently they think they are not dangerous, but I see people being slaughtered on these things.

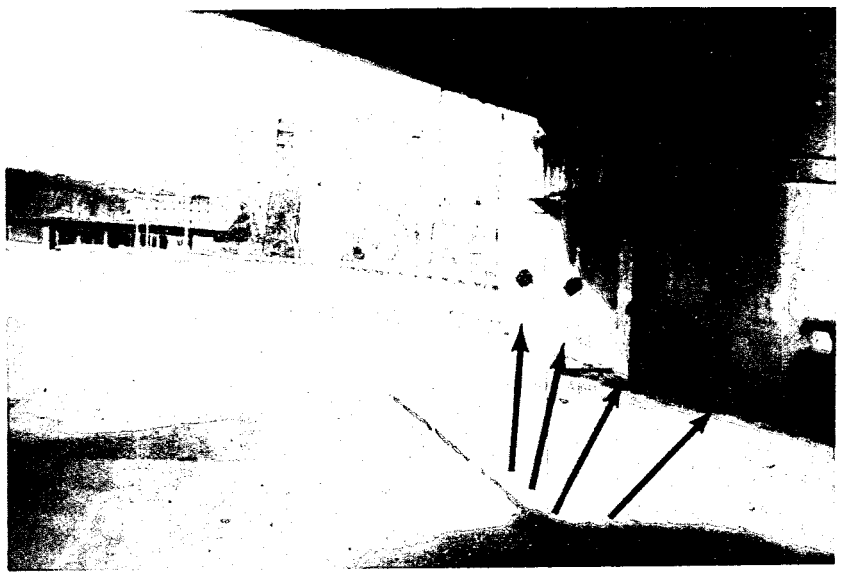
And here you see another bridge abutment. Here you have four bridge abutments. If you miss one, you are bound to hit the other three. And the tapered curb allows you to go up nice and easy.



Everywhere you look you will see these unnecessary offsets.

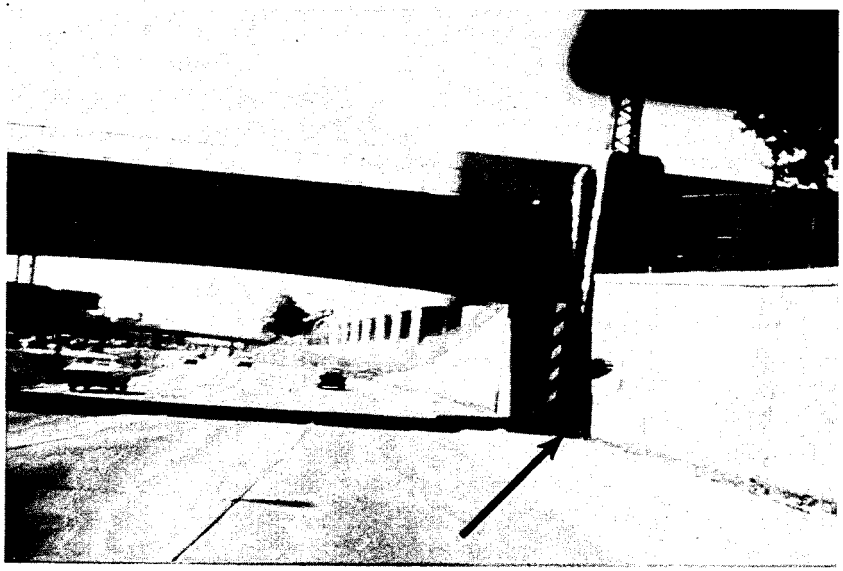


And here you see four separate posts. They actually have a concrete wall inside these posts instead of a smooth wall, to slide by. It does not involve any more money to do the job right. It is just nobody is thinking.



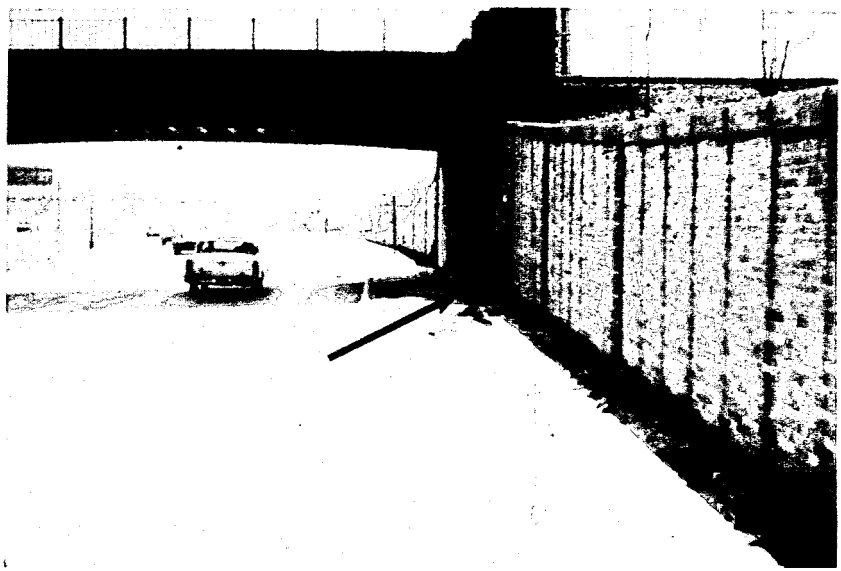
On the left you can see many places where you could have a collision.

First, let me say this is not an old highway. This was built for the World's Fair in New York. They widened this road and built that wall and bridge abutment, which are hard to see in that shadow, and they feel their responsibility is done. They put that marker there and then feel they have no more responsibility.

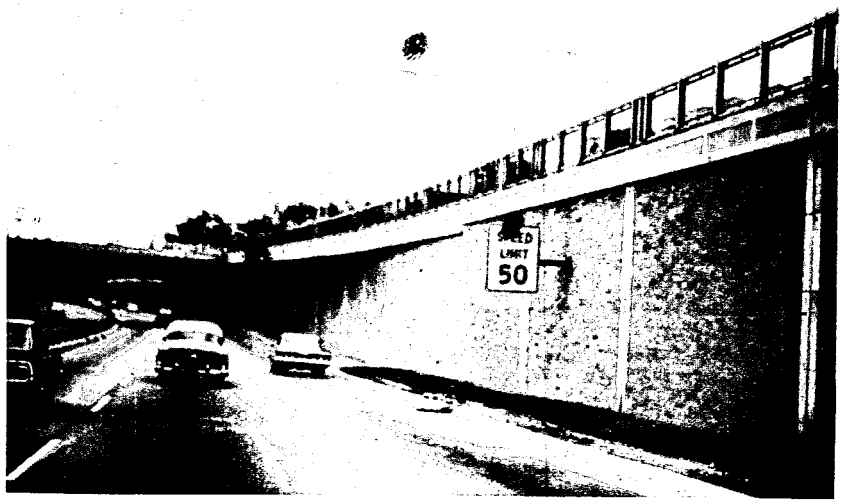


Now, this slide shows you some car did hit this area and knocked that warning marker down. If you catch it right, you can wipe out a passenger.

This wall should be smooth, but this is the way in New York State they build these things, and they are still building them today.

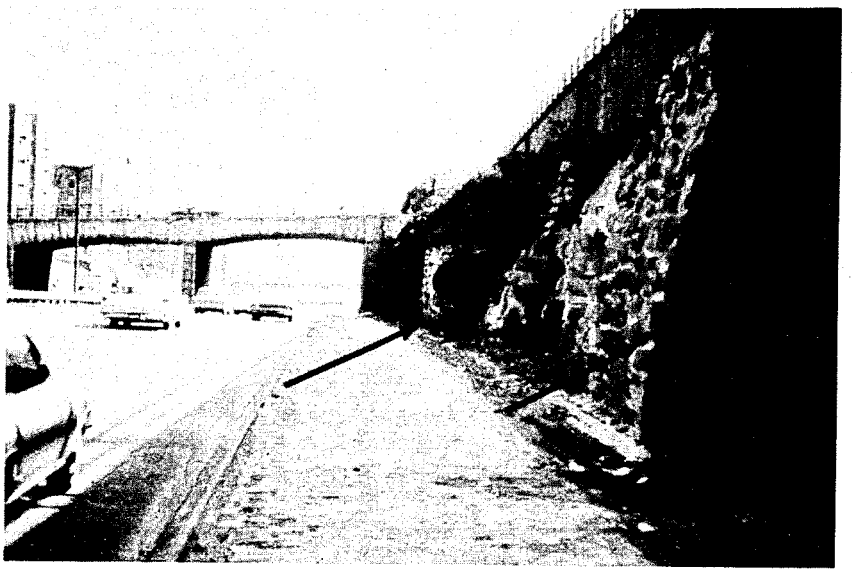


This is the way it should have been done. There is not any reason why you should have any bridge abutment at all, especially on the depressed highway. Here, you see even the sign has been put on the wall.



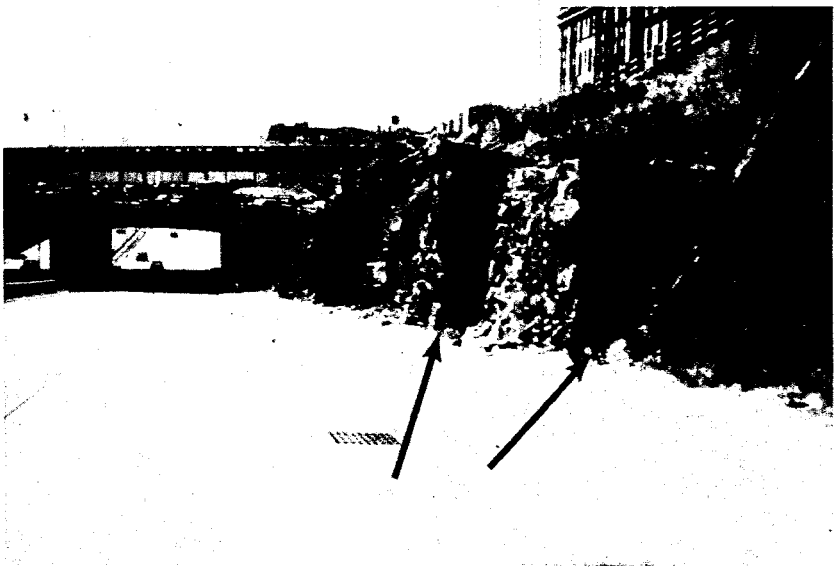
But this is what you will see on all highways. This is Interstate 95 and this is only a pedestrian bridge, a narrow bridge, and yet you see the standard.

If that was not bad enough, here you have a situation where some water was leaking out of the rocks, and during a couple of months of a year it used to freeze and create a hazard; so they sent some people over here to eliminate the hazard. What they did was build these two concrete walls to keep the water from leaking out. Before, we had a



hazard for 2 months of the year, and now we have it for 12 months in the year, 365 days. You have two abutments now that are not needed, and you can see these could have been phased out so you couldn't snag onto them.

This is an improvement project?



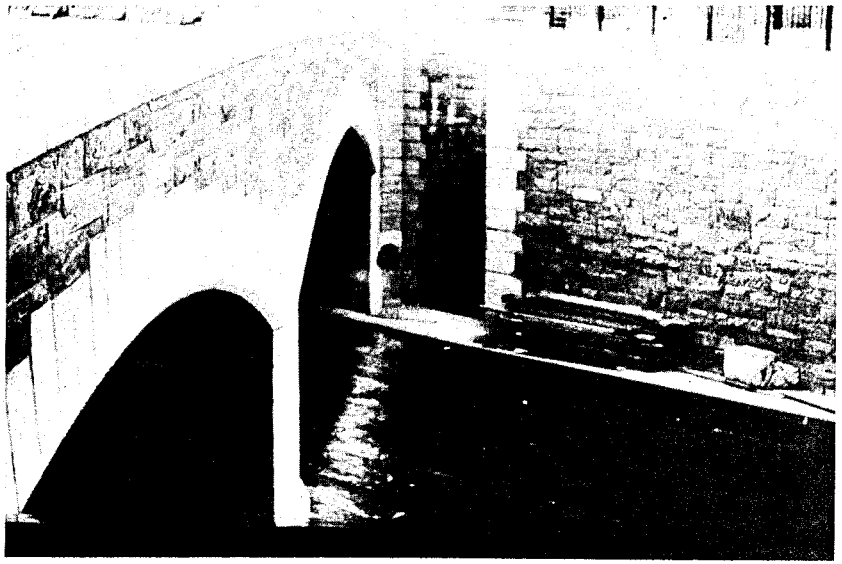
This is a little farther down, and you can see the same thing. We are creating these offsets right at the edges of our shoulders.

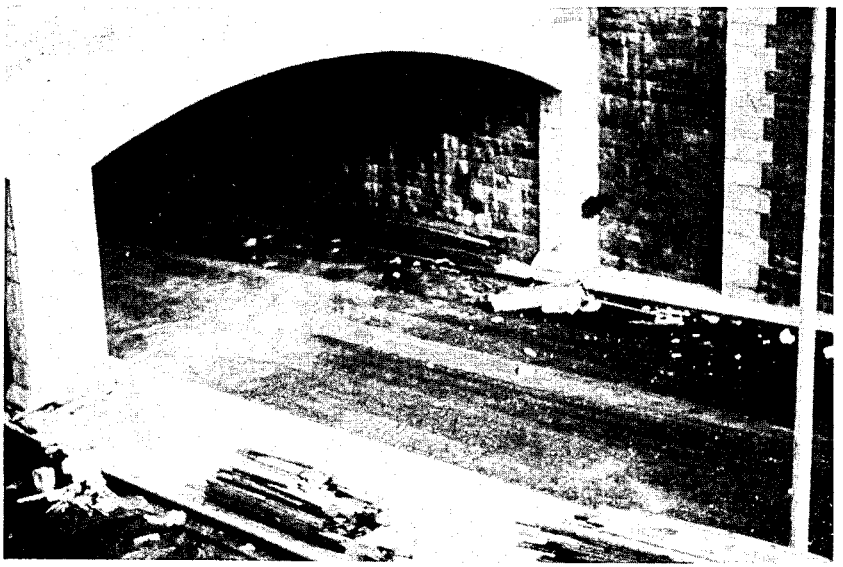
Here is a $4 million new project in my area. They built two overpasses and a small section. As you can see, we are building these bridge abutments on purpose.

Mr. W. MAY. Why did they have that sidewalk?

Mr. LINKO. You notice they have a sidewalk there and yet nobody is allowed to walk here. Here you see a minimum clearance on the right.

These slides show you that we are going to extra trouble and at great cost—going into the wall and out of the wall, and special brickwork, and there is no safety involved in this highway. These abutments are





going to snag some car, and you have a low curb there which allows this to be very possible.

Mr. CRAMER. May I refer back to figure 134. Now, Mr. Prisk, assuming this is a Federal-aid project, do we have regulations relating to distance between the road and fixed objects? Do you have regulations for distances?

Mr. PRISK. There are standard clearances that are required; yes, sir.

Mr. CRAMER. What are they? How many feet from the traveled road?

Mr. PRISK. On the edge of the travel roadway, 4½ feet is normally accepted as minimum on the left and 8 feet is the minimum standard on the right.

Mr. CRAMER. The point I am making, if they wanted to build a wall, which they have done here, and at the same time wanted to accomplish safety, I presume one method would be to bring that wall out on a plane to the edge of the bridge there. It would keep you from hitting the bridge abutment. Could they do it under your distance regulation? Would that prevent them from doing so?

Mr. PRISK. It is a little hard for me to understand the situation we have here. This could be an old structure conceivably and the roadway forced through there with substandard clearances.

Mr. LINKO. This is brand new, the whole works.

Mr. PRISK. The whole thing is new?

Mr. LINKO. New roads, new bridge, new everything.

Mr. CRAMER. Regardless of whether it is or is not, if you are going to build that wall, do your regulations prevent them from bringing that wall out on a plane to the wall of the bridge?

Mr. PRISK. So as to have smooth transition?

Mr. CRAMER. Yes.

Mr. PRISK. No.

Mr. CRAMER. Do some States, maybe, construe your distance regulations that way?

Mr. PRISK. It is quite possible. There are a variety of interpretations.

Mr. CRAMER. From two or three of these slides—for instance, the killers in the bridge five or six slides back, where they put the concrete wall (fig. 1–126) between the pillars and not to the road edge of the pillars, but they put them in between the pillars—it seems to me that somebody apparently thinks they have to put the fences a certain distance from the road.

Your answer, apparently, concedes that, maybe, some States are so construing it. Certainly they should be advised, it seems to me, that they have some latitude in consideration of safety features. Have they been so advised?

Mr. PRISK. I think you are familiar with the instructional memos that have been sent out by Public Roads with respect to clearances and dimensions for structures and particularly on points such as we are discussing. The Bureau of Public Roads works jointly with committees of the American Association of State Highway Officials and fundamentally follows the experience and judgment of those officials in their determination of the standards. And, of course, move from that to enforce those standards on the States.

Mr. CRAMER. Well, if your division engineer saw this as a project from an engineering standpoint—go back to the one with the wall (fig. 1–126). Could that structure get by your division engineer today?

Mr. PRISK. Well, taking Mr. Linko's word, which I am quite ready to do——

Mr. LINKO. This is a complete new unit, new wall. This whole area was ripped up and they rebuilt this whole thing.

Mr. PRISK. This was evidently a minimum design.

Mr. CRAMER. If it were approved, it was obviously approved without adequate consideration of safety features. That is all, Mr. Chairman.

Mr. MCEWEN. Did you say when this one was constructed, how recent?

Mr. LINKO. This was constructed about 2 years ago.

Mr. MCEWEN. About what?

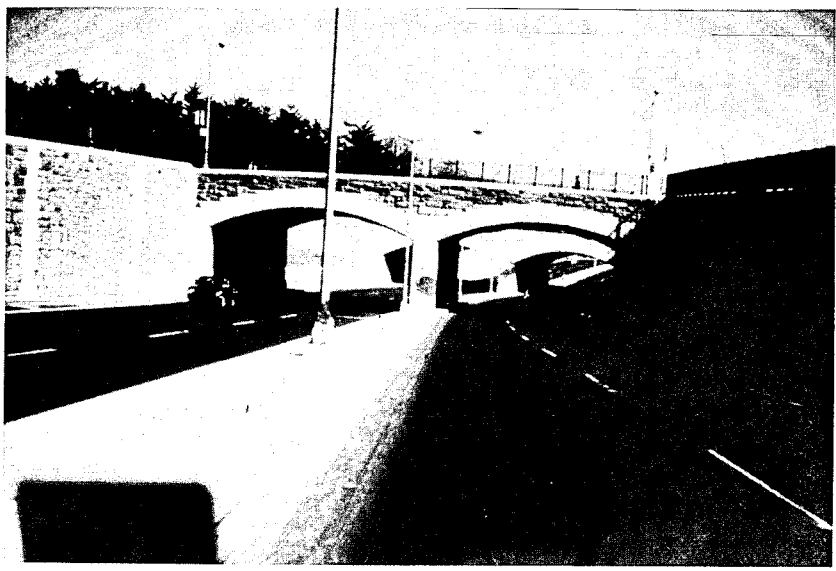
Mr. LINKO. About 2 years ago.

Mr. MCEWEN. Two years ago?

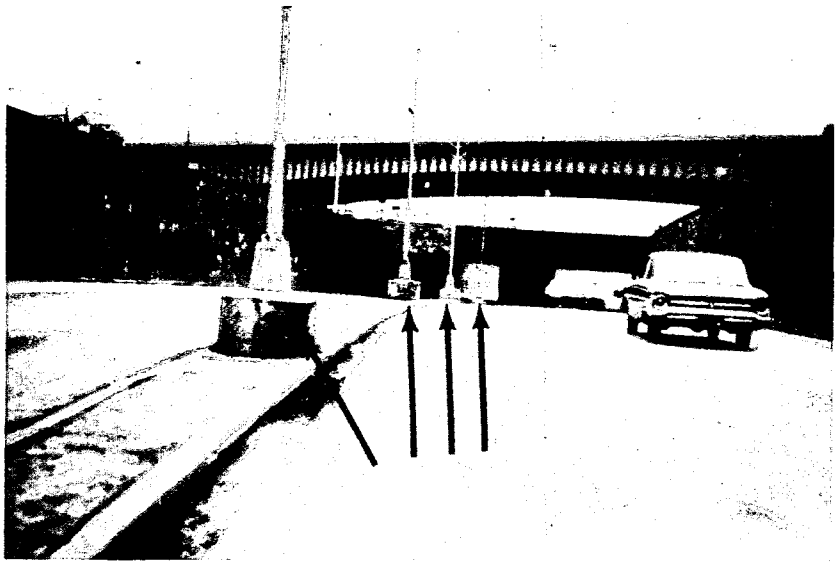
Mr. LINKO. Right.

Mr. MAY. Do you know what highway it is?

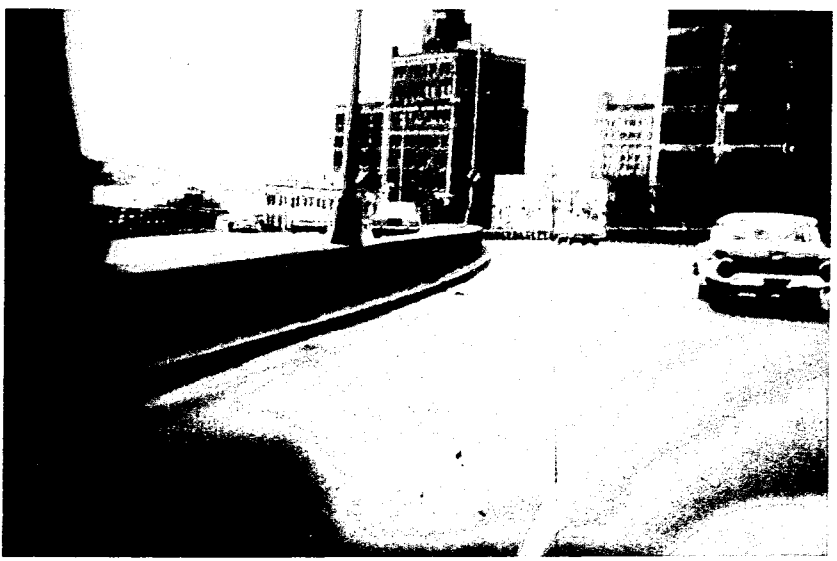
Mr. LINKO. It's in the Bronx, near Fordham. As you see, we built all of these unnecessary obstacles. This is a depressed highway, and most of the people won't see any beauty here. Here you are coming down the road, and you have a low 5-inch curb. People have crossed over this low median, knocking down two or three of these lights; every one of those bridge abutments are exposed.



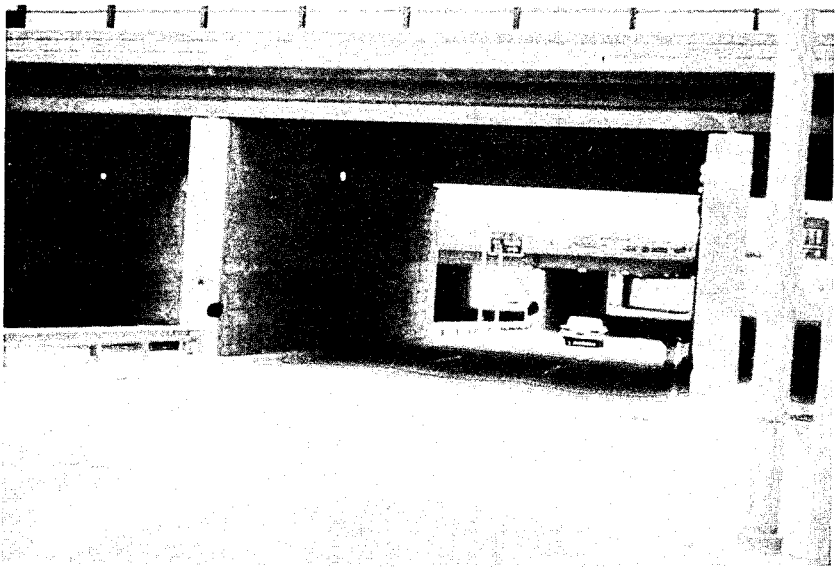
Here you see they eliminated all the bridge abutments, but they put concrete stumps in the center here under the light poles. This is wrong. You have a low curb and somebody can cross over and have a head-on crash, and if they hit these light posts, they are in trouble.



This would be the proper way of doing it. Why not build a barrier and have no maintenance at all on your light posts?

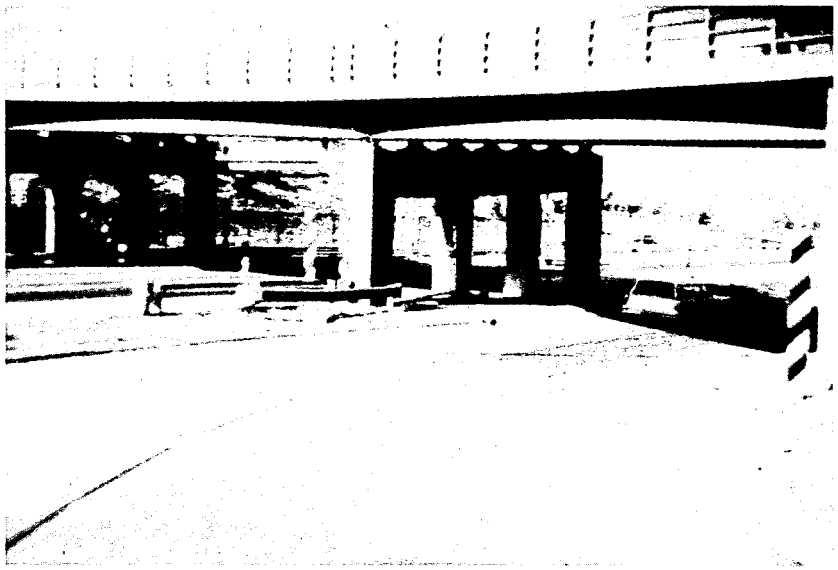


Now, this is a brand new section of an interstate highway. Here on the left the guardrail is installed wrong because you can slide right into the abutment. Notice there are three structures in this one picture.



Here is a close-up view of something we were just talking about. You see the fence in between there; the material is there to provide a smooth-sliding action. Someone wasn't thinking; there is a tapered curb there and there happens to be a little turn, and because of that someone is going to have to get wiped out in that spot.

Here you can see the guardrail protecting the first post on a downhill turn, and there is a tapered curb. They must not be interested in the other three posts. That guardrail has been damaged and it is being replaced at this time. They still neglect to see the other three posts, and it was replaced just the way it was before. The rail is too short.



Here you see three posts; the one with the dot, the middle one, has been hit; there is a black spot on it near the bottom. This is Interstate 287; we fail to provide sliding action and protection at these poles.

Mr. CRAMER. Is there any regulation with regard to distance from the edge of the highway to these bridge supports?

Mr. PRISK. Yes. It must be no closer than the edge of the shoulder. The shoulder is prescribed to be at least 10 feet in width.

Mr. CRAMER. We have seen a lot of instances, particularly in these depressed highways, where they are almost on the road, just a few inches from it, with no shoulders at all.

Mr. PRISK. That is correct.

Mr. CRAMER. How does that happen?

Mr. PRISK. Well, the requirement that I cited is for an open section such as you have here. Where you have a complete curbed and walled section—the lesser clearances that I mentioned earlier are the ones that apply.

Mr. CRAMER. It looks to me like people that build the wall, in those depressed highways, and the people that build the bridges just never got together.

Mr. PRISK. One thing to be said, Mr. Cramer, if I may, about the offsets of these structures, is that they are not put in without a purpose. Unlike some of the things that we have seen in the slides, these offsets do serve a purpose as support for the bridge.

They are part of the structural design—it would be necessary to lengthen the span of the bridges somewhat in order to relieve that particular problem where the sidewall juts into the face of the wall section.

Mr. CRAMER. Now, we also saw on some of those previous slides the very esthetically attractive stone, hewn stone apparently, on those depressed highways.

Mr. PRISK. Yes, sir.

Mr. CRAMER. I presume that that type of structure is approved by the Bureau, is it not?

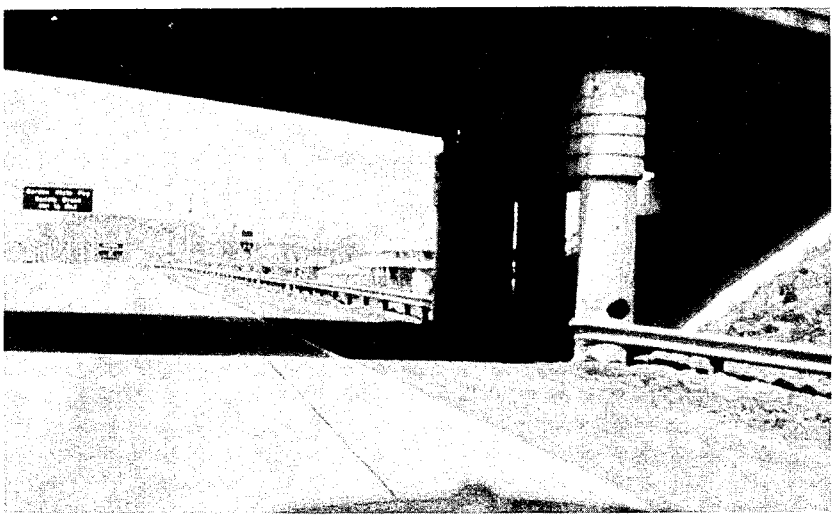
Mr. PRISK. Upon recommendation of the State, yes.

Mr. CRAMER. It is a rather costly item, is it not?

Mr. PRISK. It is more costly than other finishes, yes.

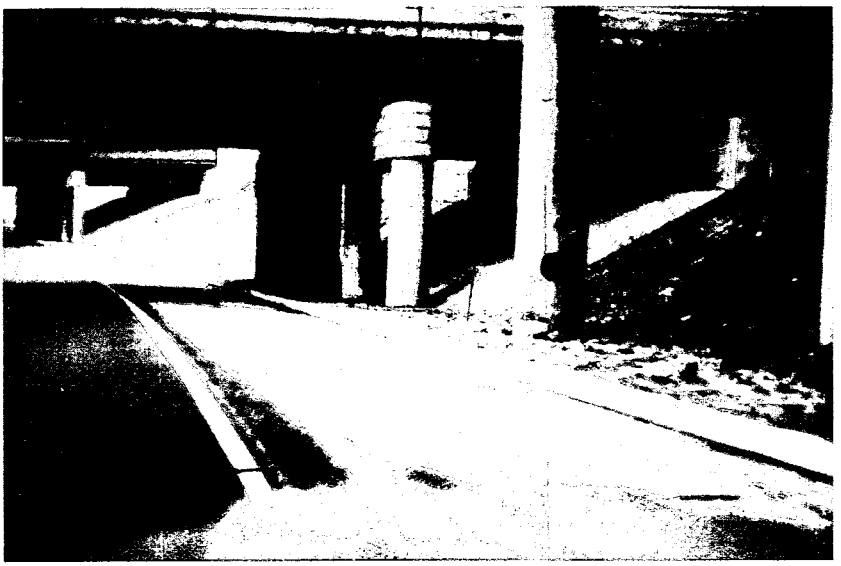
Mr. LINKO. Yes.

Here you see a guardrail approaching bridge piers, and they stop right at the piers. I feel that this guardrail should be continued



through because a car can slam into any one of the other three poles. Why protect just the first one?

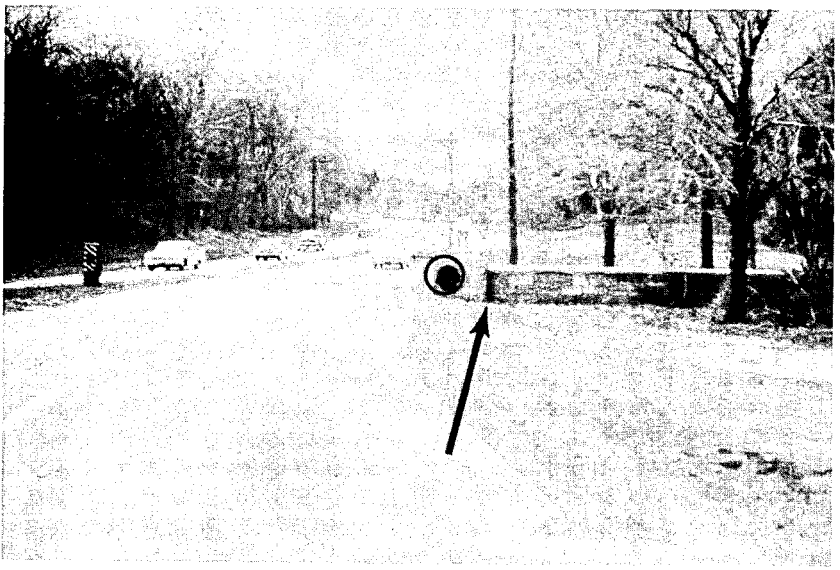
As you see here, this has been hit; they don't dodge the pole. I feel that we should not open our highways until at least all the manmade hazards are protected. We built these hazards. We are spending millions on our older highways phasing out these types, and at the same time we are building interstate highways, and we are neglecting them.



I have a few slides on landmarks. Not only do we have all the other hazards, like I pointed out, but here you see a 50-mile-an-hour park-

way, and this tells you are in Westchester County. You can have just a sign here, but instead they have these concrete blocks. There is a real hazard, and I am going to show you four or five pointing this out.

Somebody had slammed into the side of this wall, and I have an article where he is in critical condition.



I think these things are unnecessary.

Mr. CRAMER. May I ask, Mr. Prisk: It appears in some instances that those are on the right-of-way, are they not?

Mr. PRISK. Yes.

Mr. CRAMER. Someone had to give them permission to put them there, did they not?

Mr. PRISK. Yes, sir.

Mr. CRAMER. Nobody has the right to go on the right-of-way without permission, do they—this is government-owned property?

Mr. PRISK. This is under control of the State, yes.

Mr. CRAMER. Whoever is responsible—that other picture—Figure 1–147—seems to be a private fence, I don't know how it could be placed there.

Mr. LINKO. That is the boundary mark of the county, sir.

Mr. CRAMER. County mark?

Mr. LINKO. Yes, sir.

Mr. CRAMER. They had to get permission to put that there, I presume, along the right-of-way. Does your division engineer review such requests?

Mr. PRISK. I think it would be impossible for me to say whether they had been reviewed or not.

Mr. CRAMER. Do you have any right under the law, or do you exercise it, to review such requests after a highway is built?

Mr. PRISK. Yes, we do, under provisions relating to proper maintenance of projects. Some of these things are informally put in, and subsequently discovered during our maintenance inspections.

Mr. CRAMER. Do your division engineers in fact review such requests?

Mr. PRISK. Yes.

Mr. CRAMER. Apparently they have to give their approval. That is all.

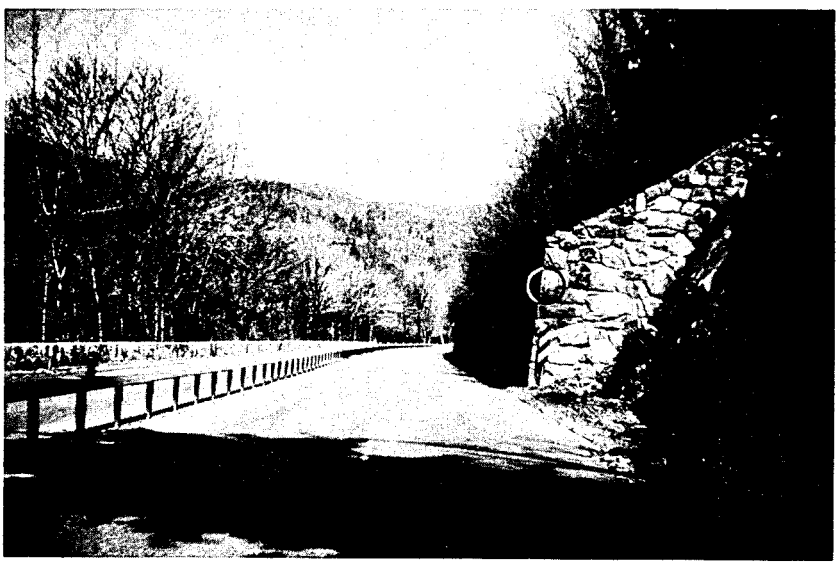
Mr. LINKO. Here you see the curb is tapered.

Another thing I want to point out is that we are now spending millions going back on these highways. I do not feel we should leave that highway this way, because it took 30 years to get a center barrier in that highway, and we failed to phase out other existing hazards on

the roadside. If we are going to go back, and it takes 30 years to get back, and phase out some of these hazards, why do we have to leave the other hazards like that? Why could we not move this or phase it out with a guardrail?

Here you see a rock on the right side, which is just as dangerous. Everything else is clear except this rock. I think we should clear our roadsides.

Here you see a lot of beauty. This is a steep downhill. It is the newest type of guardrail we have. Nobody has seen that hazard on the right. You are riding down here, the speed is 50 miles an hour, and if you run into that you are in real trouble.



Offhand I would say this is the almost perfect gore. This is the place that everybody seems to overrun. The curb should be tapered off, and they did taper off the leading edge. I would say this would be the perfect gore.

But this is what they do in my area. They have saturated these gore areas with heavy concrete stanchions. This particular guardrail was smashed into 2 years ago, and it is still lying there. I feel, at this point, I would like to say that we should have maintenance on our highways. They ought to replace the light pole in 48 hours if it is knocked down. The guardrails are given out by contract every year or every 2 years,

and in the meantime there is no maintenance. There is a hazard there and a guardrail to begin with, and it should be maintained.

Mr. CRAMER. I see four trees planted right there. Is that part of the beautification program?

Mr. LINKO. I expect.

Mr. CRAMER. It looks like new trees.

Mr. LINKO. Somebody's idea of beautification.

Mr. CRAMER. So in effect, by planting these trees in this instance, you are creating an additional hazard. Do you have any regulations with regard to planting of trees and other obstacles within the right-of-way that might be safety hazards?

Mr. PRISK. Yes. We issued instructions that there would be no trees to be planted within the clear distance of 30 feet from the edge of the pavement. These are trees of course that would constitute hazards. At the age of those trees, it probably would not hurt anybody to run into them; but as they grow they will be a traffic hazard—maybe they will get knocked down first.

Mr. CRAMER. I presume they will get knocked down or grow up to the size where they will be a hazard, one or the other. In any event, they are contrary to the regulations which are in existence, is that correct?

Mr. PRISK. Yes; if that dimension is less than 30 feet.

Mr. CRAMER. Who in the division or otherwise, either previously or presently, under the reorganization, would have the duty to review this sort of thing?

Mr. PRISK. This is a very recent instruction, and I do not know that it has had its full impact.

Mr. CRAMER. Under present new regulations——

Mr. PRISK. As things stand today, the division engineer would review the plans and would not permit planting within that distance.

Mr. LINKO. You see here a concrete stanchion smashed into, and I feel that we have saturated this particular location. This is the worst

possible place you could put something in a place where it is going to be constantly overrun; these have been constantly smashed into.

Mr. MAY. Mr. Prisk, as I recall, the studies would suggest that vehicles run off the road four times more frequently in these gore areas as they do in other areas of our highways; is that right?

Mr. PRISK. Studies have shown that.

Mr. MAY. Very critical point.

Mr. PRISK. Definitely so.

Mr. MAY. Your point, Mr. Linko, from what you have seen, we just continually clutter up our gore areas with these obstacles that can hurt and kill people?

Mr. LINKO. I am trying to point out the fact that most of these signs could be located back behind existing guardrail, or even if the guardrail is not there it would still be 100 times safer. You can see that car making just a little turn and if he turns his wheel, he is going into the concrete stanchion.

Mr. MAY. That has been hit?

Mr. LINKO. It has been hit. This is the closeup. It is constantly being hit.

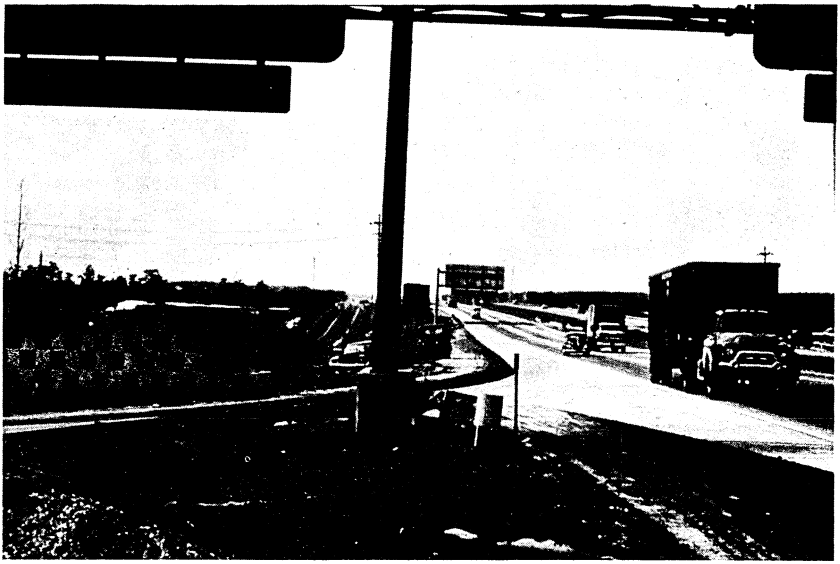
Mr. MAY. That is a sharp turn to the right. You have about 11 messages on those signs, and it becomes a particularly critical area?

Mr. LINKO. That is right. My main point here is that without spending any extra money—in fact we could have saved money—you could have backed up this sign and put it behind this particular guard rail, and it would never be hit. There would be no maintenance, and I feel it would be in the proper place.

This is representative of what happens when one of these is hit in a bad accident.

Here you see another one that has been smashed into.

In this back view here, you can see that without spending any extra money, you could have moved that stanchion forward.



Here you see where they put the sign in advance of the indecision area, like I am recommending. There was a light in that indecision area, and somebody knocked down the light. It could have been a concrete stanchion.

Mr. McCarthy. Mr. Chairman, could I ask Mr. Prisk a question?

Here is a good example, although some of the others are even better. The number of words there is—20 words. At Ohio State they did a study funded by the Bureau on how long it takes to read these signs, and they did this on official signs and on billboards. It showed the direct correlation between the number of words and the amount of time needed. Now, a car going 60 miles an hour goes 88 feet per second. They showed it took from 1 to 9 seconds, depending upon the amount of copy and number of words in the sign, to read these signs. It shows that excessive wording is going to take the driver quite a bit of time—he is going to be traversing a great distance.

Now, I would think that this excessive wording is a contributing factor to the fact that you have four times the normal number of runoffs. What are you doing in this area?

Mr. Prisk. Well, you put your hands on a very important problem, certainly. First of all, you mentioned 18 or 19 words on the signs. This is the difficulty we get into on some of our expressway situations, where there are a great many destinations to be served. If you are to move into this problem and have to decide which one of these words to drop off, I daresay, after a little study, it would be hard to take them off. Perhaps any of them.

The possibility we have been considering as part of our research program at the Bureau of Public Roads is to make some use of the audio capacities of individuals as well as their visual capacities, to give then notice of exits and destinations to be served at a particular

interchange. This is in the very early stage, however, and, until that time, what we are doing is abiding by the standards which call for no more than two destinations on any one sign. Where you have to have multiple signs, as in this instance, we make a particular effort to keep down to a single destination on a sign where that is possible.

It takes a great deal of careful planning in order to handle some of these complicated interchanges.

Mr. CRAMER. May I ask Mr. Prisk a question?

(Mr. Blatnik resumed the chair.)

Mr. BLATNIK. Mr. Cramer.

Mr. CRAMER. Who dreamed up these signs saying "Ped-X" to mark a pedestrian crossing?

Mr. PRISK. I do not know what individual thought of that initially. Of course it is an attempt to save sign space; and through that to give more legibility to the sign.

Mr. CRAMER. If you have not seen them before, you are likely to pass four or five of them not knowing what they are. I did it myself. I did not know what the heck it was. By the time I fiured out what it was, I had already passed two or three Ped-X's. That is, as I understand, for pedestrian crossing; is that right?

Mr. PRISK. That is right.

Mr. CRAMER. Is that wording, that type of sign, is that approved by the Bureau?

Mr. PRISK. That is right. It is approved by others than the Bureau. The National Joint Committee on Uniform Traffic Control Devices has approved that particular message.

However, we are making a very substantial effort right now to research that type of message as against the symbol which is more commonly used in European systems, to determine whether we cannot give the driver a simplified message through a symbol.

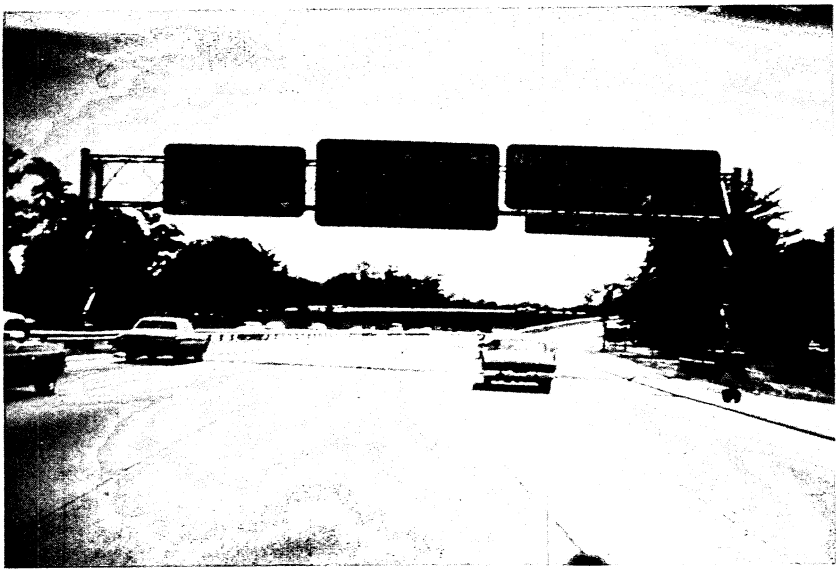
Mr. CRAMER. I think they do a much better job in Europe. They have a picture of an individual on it, and by a picture you can very clearly see what it is, that it is a crossing. But with Ped-X—you are going to have to educate the motorist considerably before they really understand it.

Mr. PRISK. We are taking a serious look at that European system.

Mr. LINKO. You see I have outlined where I would suggest that you put this particular bridge sign (circle). You can see you have a full exit lane. The sign is actually overhanging the exit lane and it is in the worst possible place in the gore area as far as being hit is concerned.

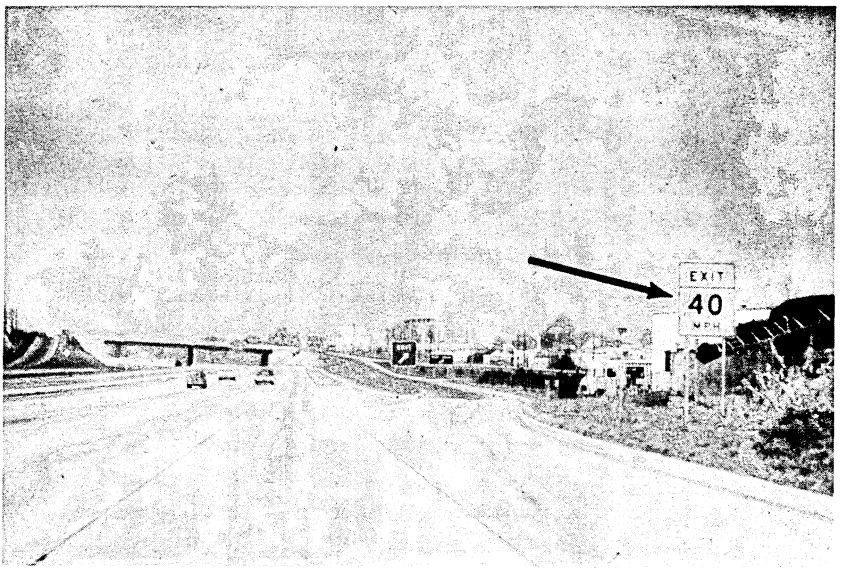
You can see by putting it at this point (circle) you can put it behind guardrails, leaving the gore area clear. This would not cost any more money.

Here is where I feel a sign should be put, in advance of the gore area. One reason is that you are able to read and see what you have to do first and then make your decision. Putting it in the gore area might create a condition like this in the next slide.

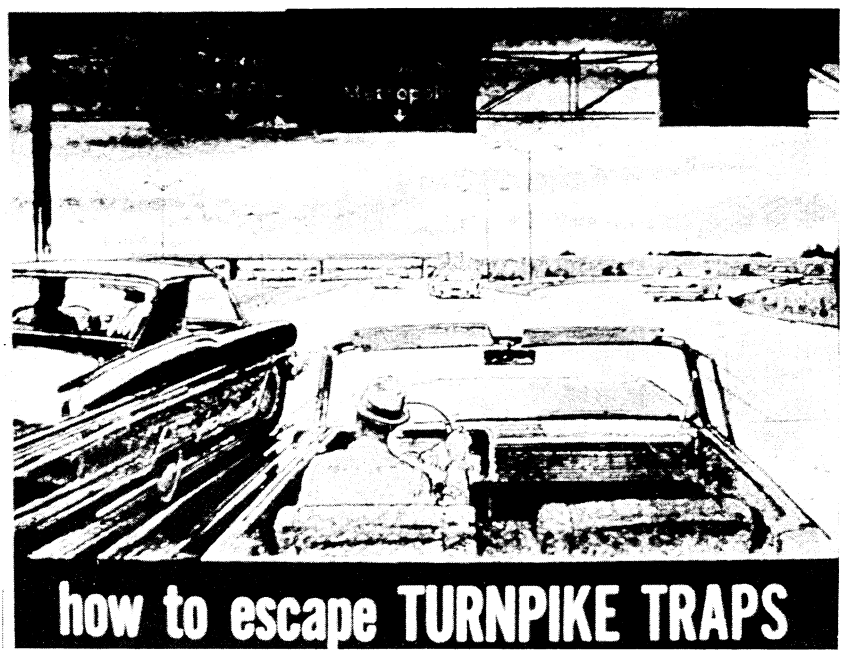


You have to make a decision, and the proper place to put this is in advance at the proper time, early. The sign should be where the dots are.

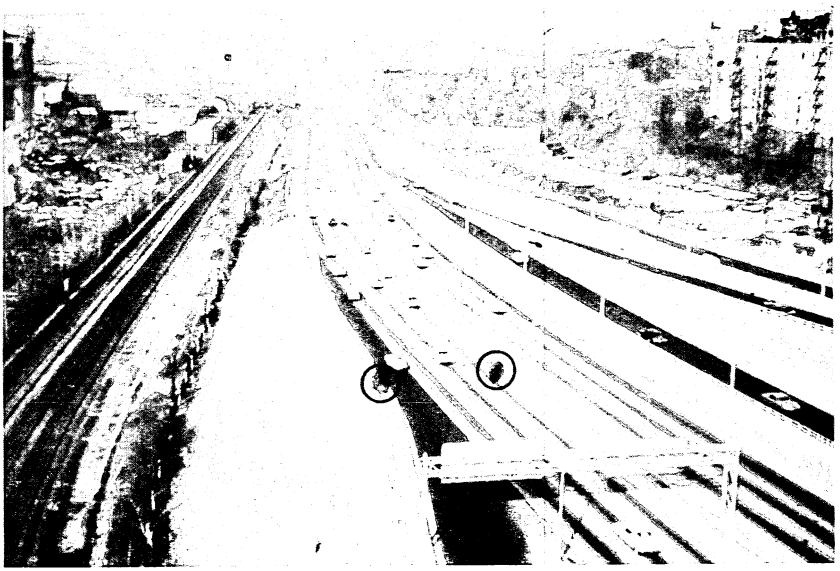
Anybody that passes this sign (arrow) should not be reminded that he has got to make an exit, because the smartest person, if he sees that, will try to cut somebody off and will get in trouble.



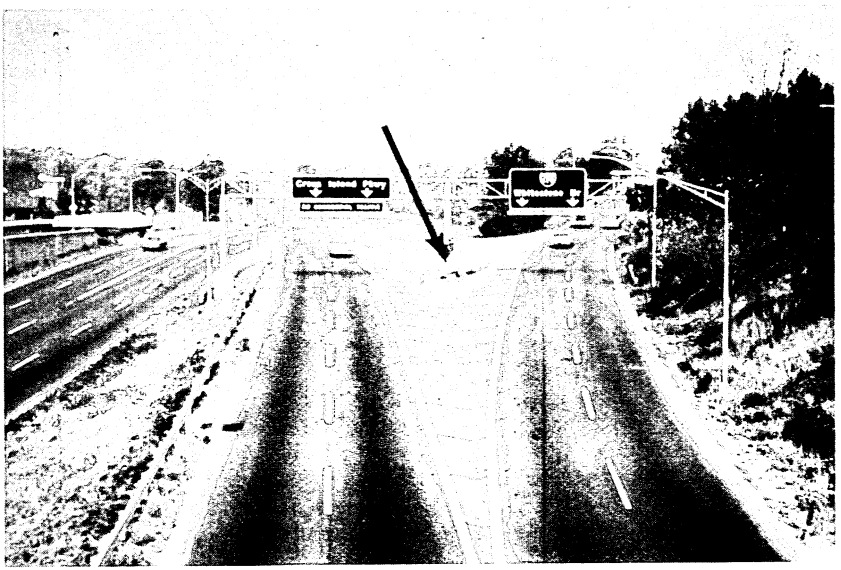
Here is the point—somebody might make this maneuver; at the last second he is trying to cut the guy off and cross two lanes of traffic.



We can save a lot of money by putting these signs in advance. On many of our roads the signs are at this particular point in the gore. You could span just four lanes instead of six lanes and save money doing the job, by putting the supports where the circles are.

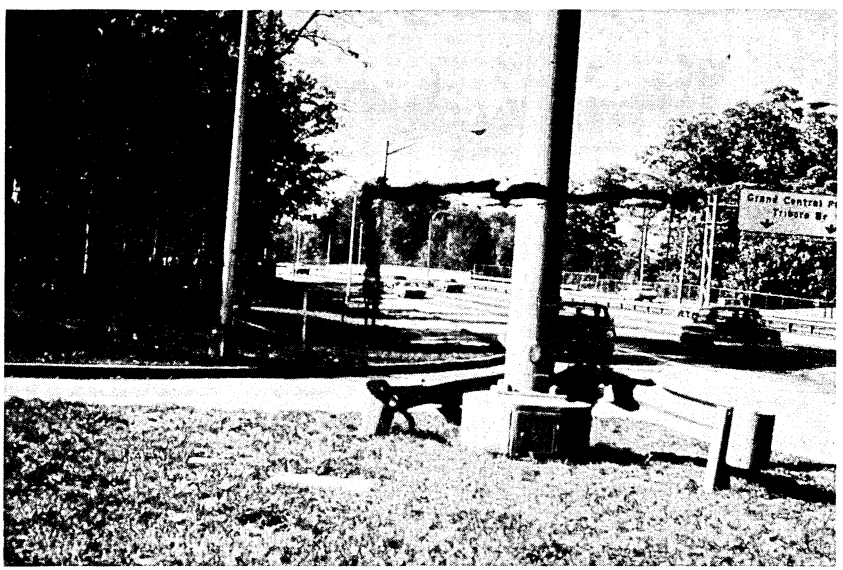


Here is a perfect gore area. I do not think you could mark it any better, and yet somebody smashed the rail. You have extra room and nothing was spared in design here, and then we saturate the gore with a concrete stanchion.

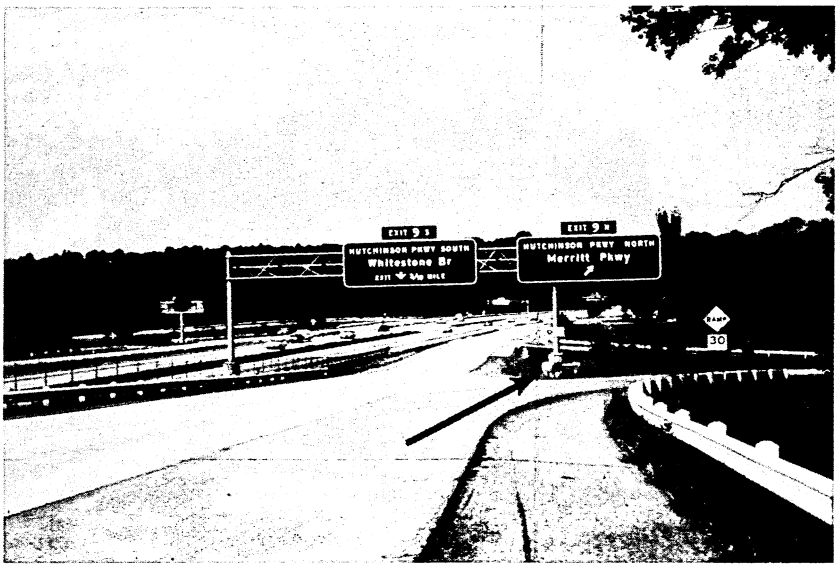


Two years later, this is the same spot, and the guard rail is still lying there. I would again like to bring out the point, no maintenance on Interstate highways. According to the books I read, the State is responsible for maintaining these highways. In my State they gave the responsibility to the city; but the city does not maintain it.

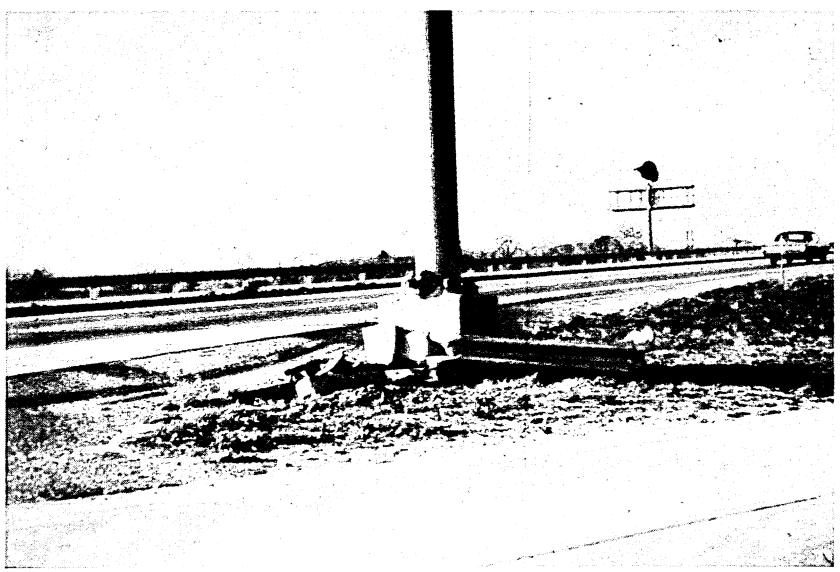
Here is another gore that has been hit and the sign could have been put in advance like this, where I have the outline.



Here is another sign you could have backed up. Give the guy a break. We have neglected this area.

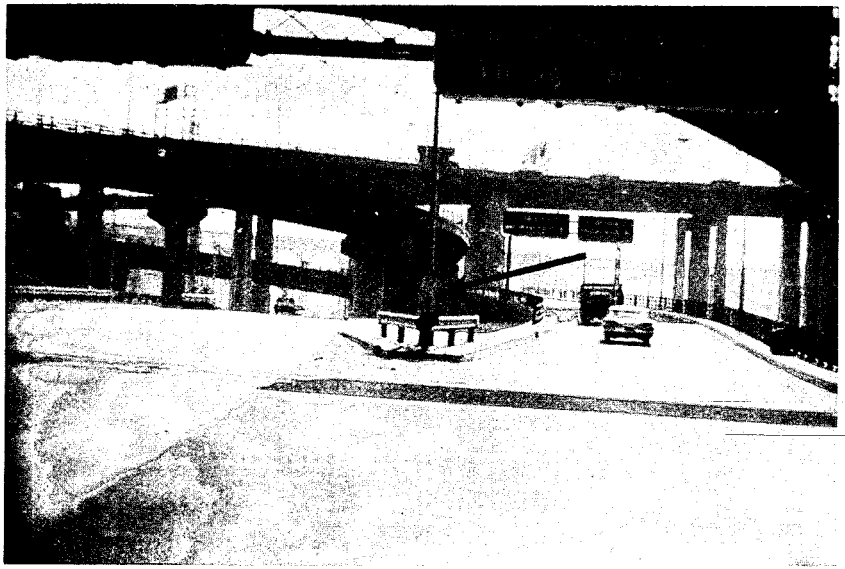


Here you see another one smashed and the book actually recommends that you put these signs there. That gives you a good idea of why some of these are here. In the background you can see the dot showing a similar sign. All of those gore areas are saturated like this. Also, note the improper guardrail; it is supposed to be 40 feet, not 12 feet.



Here you see they spanned the gore area with the sign and had to go and put a little light bulb there. Once you put a little bulb there, you have got to have 40 feet of guardrail to protect the light.

They have money for this guardrail at this point, but I feel they should use it where it is really needed.



Mr. MAY. Any particular reason why they should put a guardrail in front of a breakaway light pole?

Mr. PRISK. No. Experience and research have shown that short sections of guardrail at light standards are more hazardous than an unprotected light pole.

Mr. MAY. This is another example of the waste of money and the creation of a hazard.

Mr. LINKO. That is the way I feel about it.

Mr. BLATNIK. A breakaway light pole would not do any good if you have a concrete obstacle like this?

Mr. PRISK. I was basing my statement on the breakaway type pole, which would break it at the ground level.

Mr. BLATNIK. Why do they have a big block of concrete there? If that concrete base were flush with the ground you could still bolt the light post to it.

Mr. PRISK. Some of this is consideration of vertical clearance to the bottom edge of the sign. This is rather carefully controlled, so as to provide clearance consistent with the clearance of structures. The pole is ordered in a given standard length, such as is commonly manufactured in quantity. If this is shorter than what is required, the concrete is built up high enough to reach the bottom of the pole and to obtain the proper vertical clearance. There is no real reason why a somewhat longer pole could not be ordered at a slight additional expense, and that footing could then be flush. You might have a slight excess of vertical clearance under the sign.

Mr. CRAMER. Mr. Prisk, is there any reason why these gore areas could not be cleared and the signs put up ahead of the exit ramp or before the cutoff, as Mr. Linko suggested?

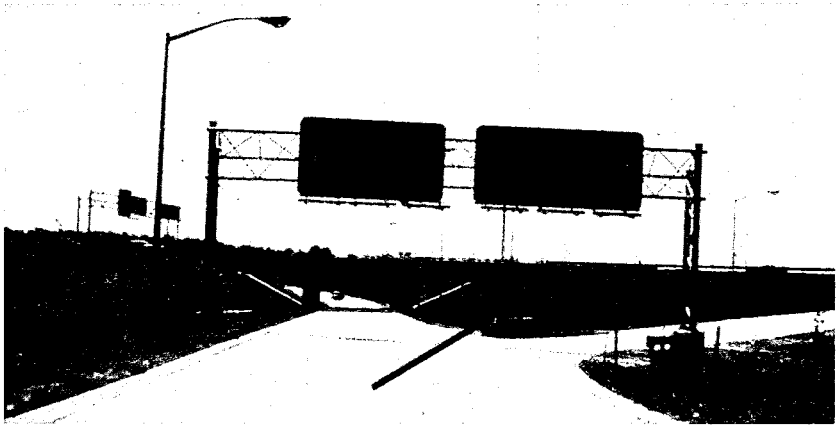
Mr. PRISK. No sir. And we are very sensitive to that. We are quite aware of it, and have attempted to stress this with the States, at every opportunity, and the necessity to mount these signs in advance of the gore.

Mr. CRAMER. These new safety regulations that are going to be promulgated, they will give an opportunity to do something about it then by regulation, will they not?

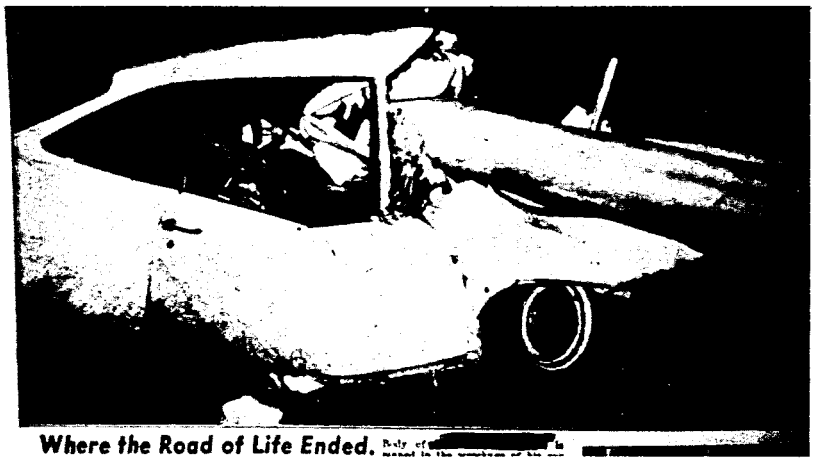
Mr. PRISK. Well, to the extent that you can accomplish it by regulation; yes, sir.

Mr. LINKO. Here you see we did put this one in advance. Here we put a light pole in and put a guardrail anyway.

I think we should make that off limits. Our whole State is messed up. Other States, like Jersey, put most of their signs in advance. This particular guardrail protecting that light pole is not needed, because it is an easy-knockdown light pole.

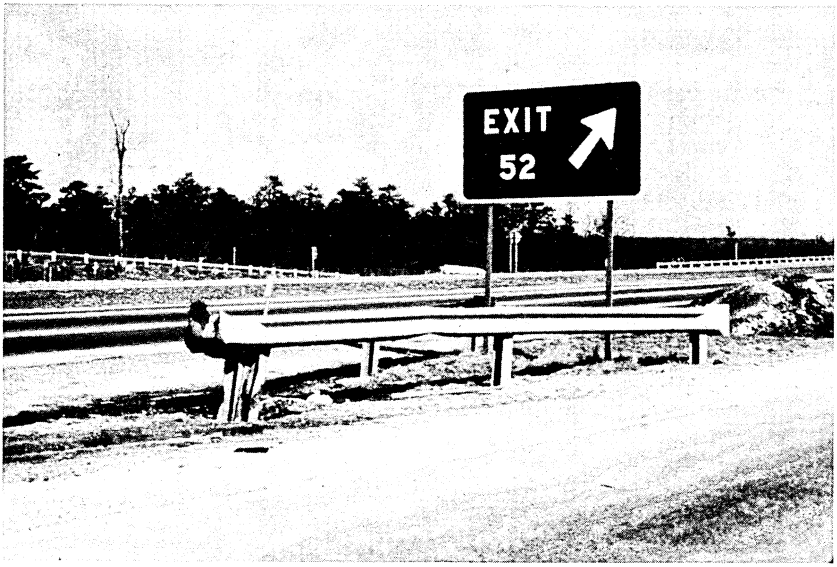


You can see what happened. It went right through the windshield in this car and killed that guy. The guardrail is really not needed.



Where the Road of Life Ended. [redacted]

This is the particular installation. All it says is "Exit 52," and it is an easy-knockdown sign and they have 48 feet of guardrail which cost a fortune of money. It is not serving any real purpose, and it kills the driver if he happeneds to run into the guardrail.



Mr. BLATNIK. This is the guardrail that was struck in the preceding picture?

Mr. LINKO. This man died because they were protecting this easy-knockdown sign.

Mr. BLATNIK. The only function this guardrail serves, Mr. Prisk, is to protect the sign which is a breakaway sign.

Mr. PRISK. I would say that is correct. There is a very curious reverse of emphasis about this word "protection." You talk about putting the guardrail in to protect the sign, where actually the guardrail should be put in to protect people that might possibly run against it. The guardrail installations only should be put in a place where they would provide more safety than would be provided if they were omitted.

I think that is a very important point to understand.

Mr. CRAMER. May I ask Mr. Prisk a question?

Mr. BLATNIK. Mr. Cramer.

Mr. CRAMER. Referring again to the report on highway design and operational practices of AASHO that was recently issued, relating to highway safety, in the subject matter of gore areas, it says:

> Since the rate of accidents in the gore area is approximately four times as great as the rate of ran-off-the-road accidents at other locations, it is imperative that the gore area and the area beyond be kept free of all hazardous obstructions, so as to provide a clear recovery area for out-of-control vehicles.

Then there were other suggestions.

Now, the Bureau had previously adopted other AASHO reports relating to highway standards. Is it contemplated that this highway safety report is going to be given consideration?

Mr. PRISK. That report you referred to has been adopted as a policy by the Bureau of Public Roads——

Mr. CRAMER. That is what you said yesterday.

Mr. PRISK. Yes.

Mr. CRAMER. So in the future these gore areas, so far as the Bureau is concerned, should conform to the gore area standards or recommendations set out in the AASHO report; is that correct?

Mr. PRISK. That is our declaration.

Mr. CRAMER. And I assume that these likewise will be given consideration by Dr. Haddon and the safety agency?

Mr. PRISK. I would expect that.

Mr. CRAMER. Thank you.

Mr. LINKO. Here you see another location with an easy-knockdown sign, similar to the one where that driver was wiped out. There are 48 feet of guardrail here also, and you can see that, if you knock over the sign, it will not harm the car. Yet they are trying to protect it. They are killing the drivers.

This is the Long Island Expressway. A lot of it is newly built, and I feel that we have an obligation, not only to keep the gore clear on the highways but to go back and rip up that guardrail. Just take it up and leave the sign there, before any people have to die.

This is the type of sign that can be hit and knocked over and the car can continue.

As you see, the purpose is defeated here because there is a spear of guardrail in the gore.

This is a serious matter. Here I have a series of pictures showing 48 feet of guardrail protecting an exit sign. It has been hit many times.

So here it was hit. Instead of removing it completely, they made it stronger, and it is costing more money. This has been hit many times.

And this is also an exit sign. There is no guardrail here, but this is not an easy-knockdown sign. This particular sign is held up by two 8-inch I-beams, and all it says is "Exit." And this particular section has many of these signs.

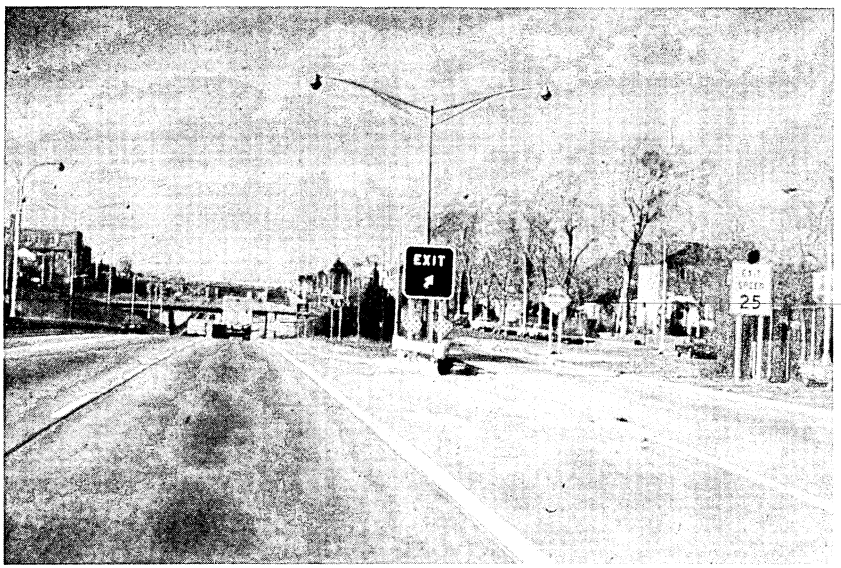
Mr. BLATNIK. When you say 8-inch I-beams, you are referring to sort of a steel——

Mr. LINKO. That is right. Steel beam in the shape of an I. There are two of them there. There were two people in there, and they both died.

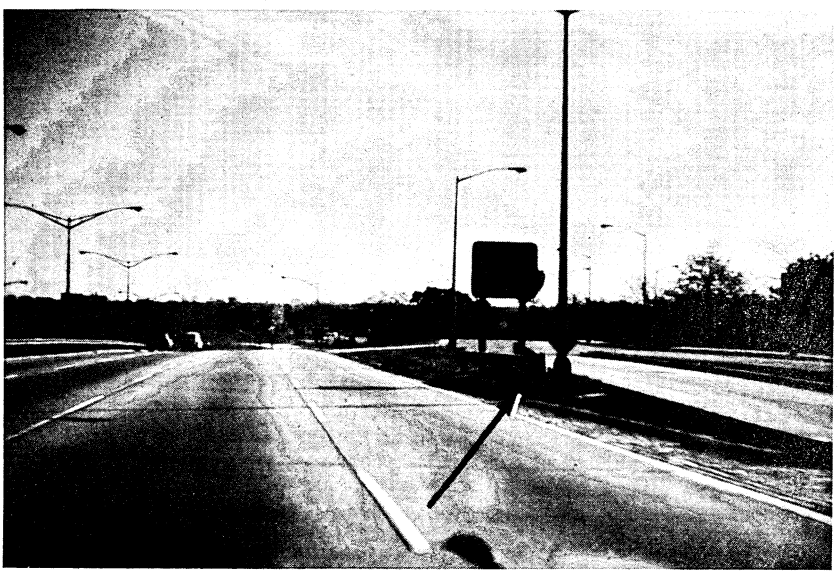
This is the sign. They didn't even knock it over.

After they died, they replaced it with an easy-knockdown sign, which it should have been to begin with.

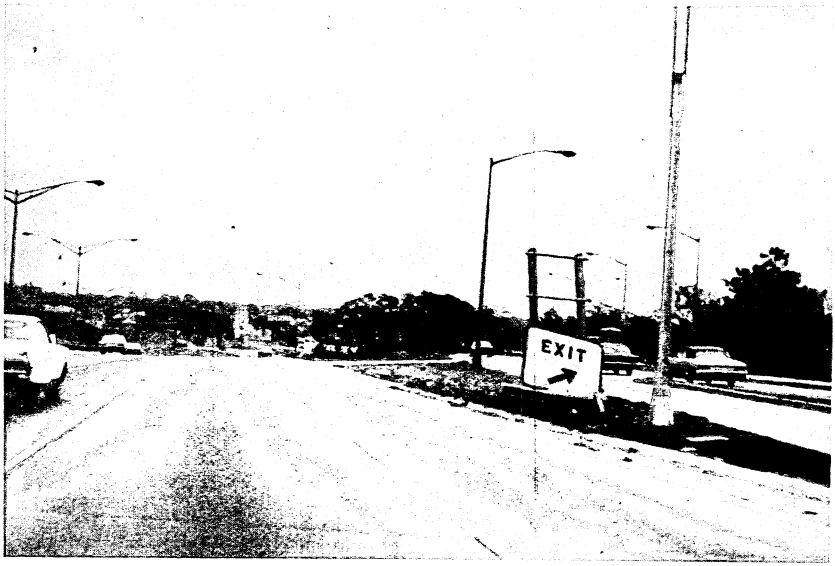
Here is another one with a guardrail protection. I recommend that they discontinue that exit sign completely and use the other sign on the right, the "Exit Speed 25" sign. I want them to combine the signs. They can make it a little larger, and give the impression of being an exit.



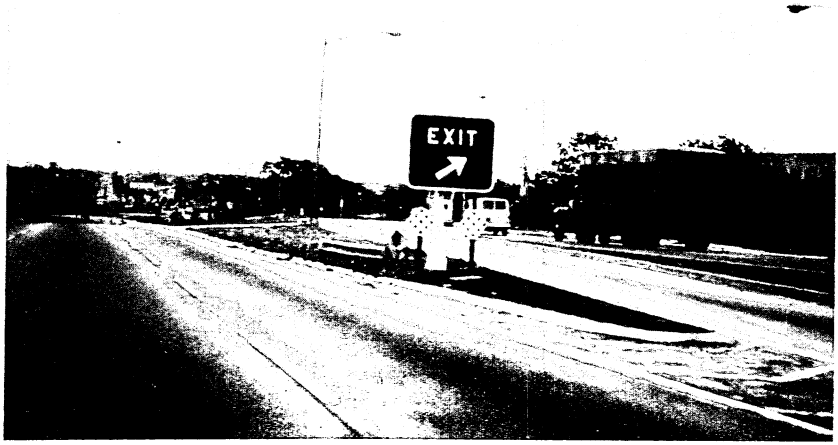
Here is another sign that I took prior to a fatal accident. When Mr. Kopecky came to New York several months ago to look at some of my slides, we noticed somebody ran there through this gore area, and they got maximum damage.



The light pole also had been knocked down but they replaced it before I took this picture.

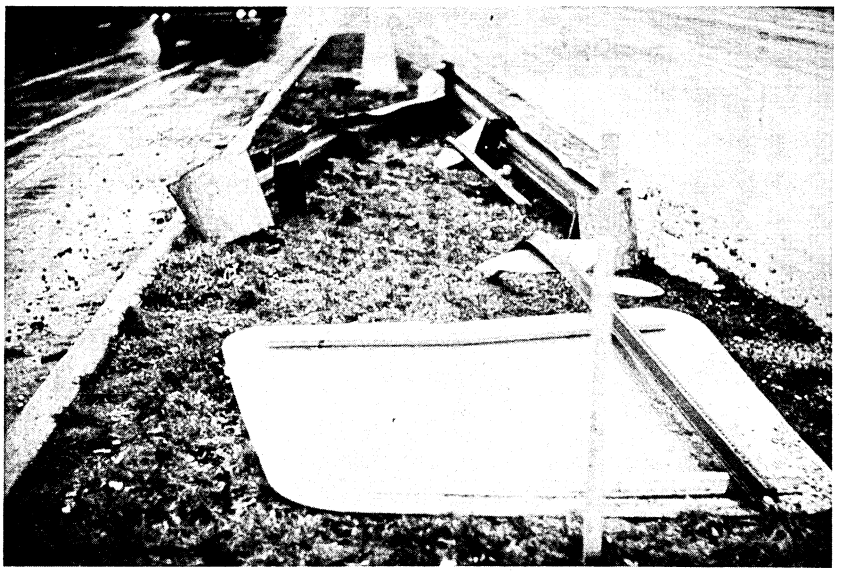


They put an easy-knockdown sign there, but they failed to remove the guardrail in the rear which is laying on the ground.



I want to say that this sign has been hit again and there was another accident since. And the rail is still on the ground.

Mr. MAY. Would you go back and do that series again, please? We have here a breakaway light pole?



Mr. LINKO. That is right.

Mr. MAY. We could have put that exit sign on the light pole to begin with?

Mr. LINKO. That is right.

Mr. MAY. We did not do it. We put it up with two heavy steel I-beams, and we put two pieces of guardrail in front of it. What happened?

Mr. LINKO. Two people died there.

Mr. MAY. So they replaced the light pole?

Mr. LINKO. Yes, and then they put up an easy-knockdown sign; but the guardrail is still a menace because it is laying on the ground right there. When Mr. Kopecky came to review this material the sign was pushed back over the guardrail. The guardrail is there today, and that was almost 8 months ago.

Mr. MAY. Apparently the people who put up the light poles had no interest at all in the guardrail——

Mr. LINKO. Evidently they have nothing to do with it. It should be ripped up, and removed. At this particular point, it is not serving any purpose at all, but just waiting to do unnecessary damage.

Here you see a sign which is supposed to be protected by the guardrail. You can see that you could go to the left of the guardrail and hit two of the three poles. That guardrail is a menace. It is not serving a purpose.

Mr. MAY. And any time you see that triangular wooden base with a light pole, that is temporary?

Mr. LINKO. That type of pole, yes. It has been hit.

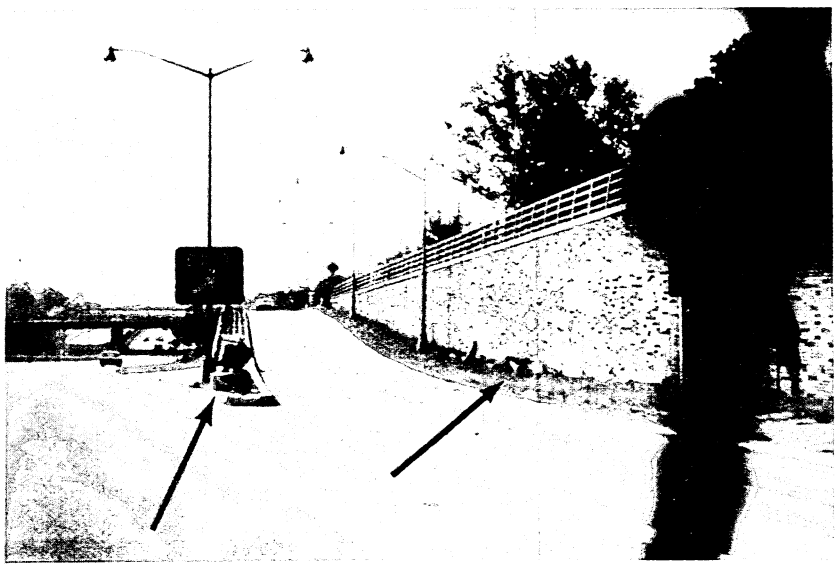
Mr. MAY. The original pole was hit?

Mr. LINKO. Yes, that is temporary. A gore area is a place that is constantly hit. We should have recognized it years ago.

You asked me a question, could we put this sign on the light pole? We could. Here you see a sign on the light pole. This particular stanchion you see laying on the ground on the right-hand side; all it did was hold up an "exit" sign and somebody smashed it down and the stanchion has been here for 2 years and they fail to remove it. And next time somebody goes through the gore he is going to get killed.

Mr. MAY. That is a breakaway light pole?

Mr. LINKO. That is right.

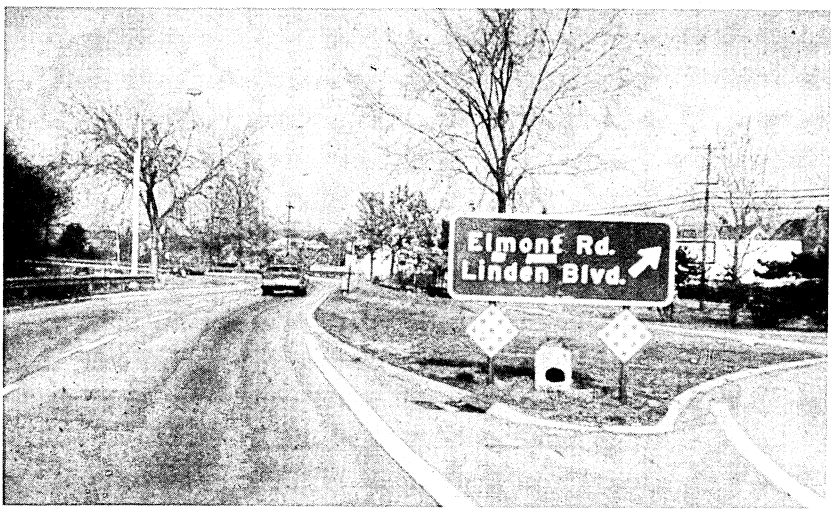


Mr. MAY. They will never get to it, because they will smash into that concerete pedestal?

Mr. LINKO. This is right. I would like to point out this is Interstate. I think we should get some maintenance.

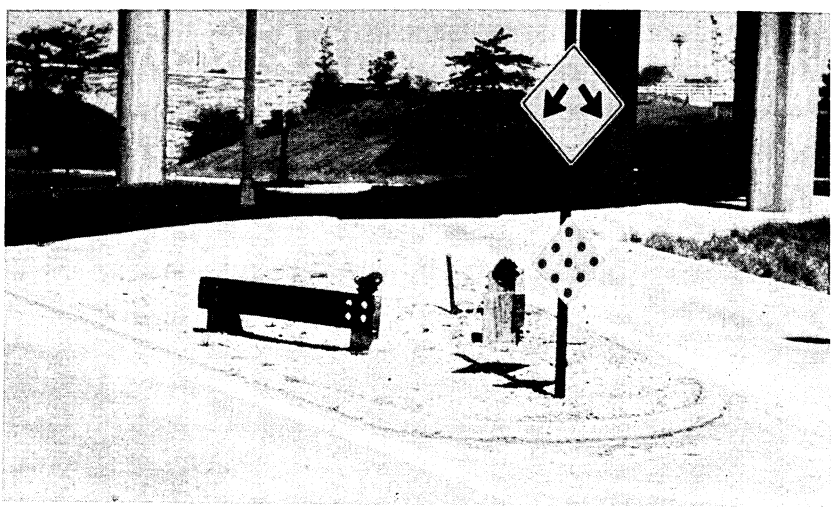
Mr. CRAMER. There is another example of those light posts going up the ramp, constituting a hazard, when they could just as easily be put on the wall. Is there any reason why those lampposts could not be put on the wall?

Mr. PRISK. No, sir.



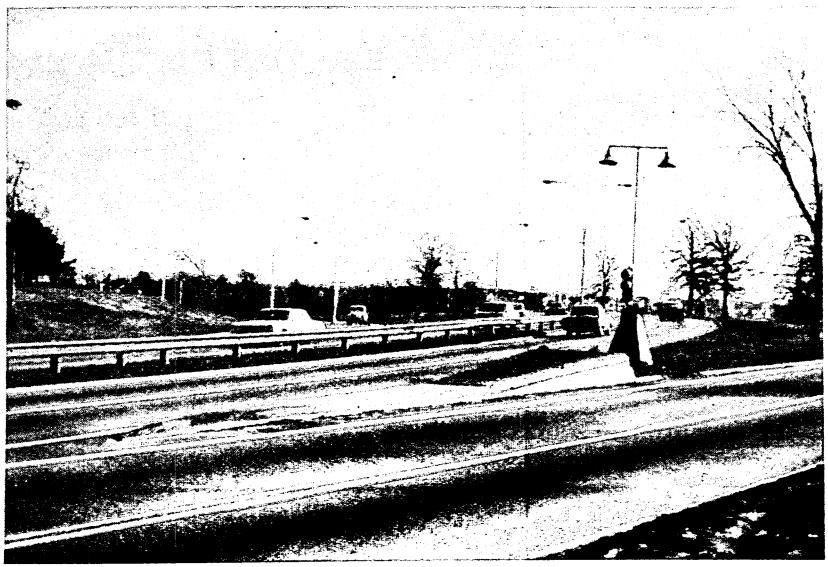
Mr. LINKO. Here also you see a new sign just installed and there is a concrete stanchion there between the legs. Nobody thinks of removing it. This is an easy-knock-down sign. It (the stanchion) is not serving any purpose at all.

Here also you see a sign knocked down two 2 years ago and the stanchions are still there. A small sign has since been put in.



Here is another gore area that is clear but it has been overrun.

This is the front view of the previous slide. There was an accident and the light pole was knocked down and a temporary pole put back, instead of removing the light and putting it inside the center guard-rail. This ramp in the gore is an expensive thing, and this actually could tip you over.



Mr. CRAMER. There is another instance where you have a lot of trees making a pretty good hazard as well, right along the side of the road?

Mr. LINKO. That is right. This is in the gore area. This is a while back. I have got pictures showing you they are planting trees right now.

Mr. MAY. Now, Mr. Prisk, I do not understand this one at all. What is that? It looks like a ramp.

Mr. PRISK. This is a type design that was used in some areas. I do not know if I ever have seen one quite like it myself. I am certainly not suggesting that it is any kind of regular practice.

I think this introduces a very definite hazard in the roadway, and at a place where it should be possible to run across the gore. Even the curb itself, as Mr. Linko has indicated earlier, is not always a necessary part of the gore installation. I think this is one of the first things that you must notice; namely, that the curbs at gores are often superfluous.

Mr. MAY. You are kind of perplexed about that one yourself?

Mr. PRISK. Yes.

Mr. CRAMER. That would make a good ski jump.

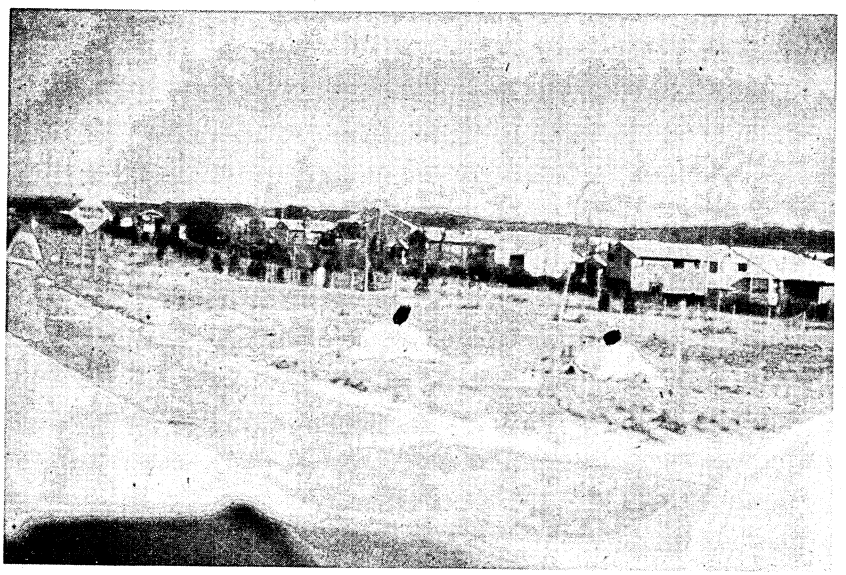
Mr. LINKO. Another bad thing about this particular spot, they have a blinker light, and anyone running through that area, it goes right through the windshield.

This is the Cross Island Expressway, sir.

Mr. MCEWEN. Cross Island Expressway?

Mr. LINKO. Yes, in Long Island. Actually, the whole installation should be removed. The light pole should be put inside the center rail like you see the rest of them.

I made an effort to try to clear these gore areas, and I talked to everyone and anyone, State officials, city officials, about these danger areas as far back as 2 or 3 years age. Here you see them building the



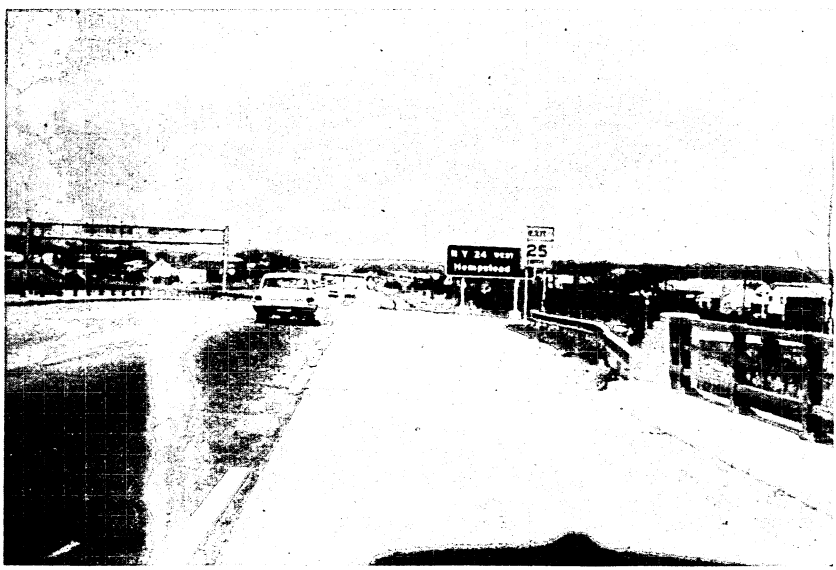
stuff here. I have no way of stopping it. I have contacted everybody. This is a clear area that can be overrun by almost a quarter of a mile.

This is the finished product. There is no guardrail. If you back up and take a look at this thing, you see it did not have to be there.

You have a guardrail in advance on the right. The guy could read it ahead of time.

Mr. MAY. About when was this installed?

Mr. LINKO. This was installed last year. This was a federally aided highway. With all the efforts I have been making over the years to



try to cut it out, I have watched these people build this stuff and I have tried to stop it. It did not do any good. You can see by putting it behind the rail it is impossible to hit. The proper place where these signs should be is in advance where you can read it.

Here you see this is our Grand Central Parkway. Put this sign in the center of the gore, and not at the beginning. This is a gasoline station. A guy might get the wrong idea and think this is an exit.

These are all very poor decisions. Here, just by reversing this sign, as I marked in, and taking it out of the gore and putting it on the right island, would make it impossible to hit.

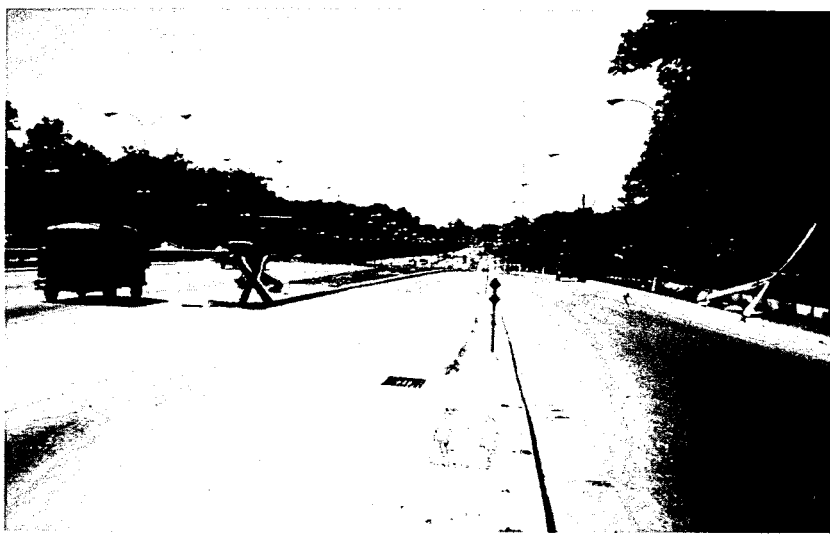
Mr. MAY. It has been hit?

Mr. LINKO. Yes. With no maintenance. There is no driver decision to be made on the right-hand side. But in the gore area, a guy may decide to go left or right, and that is where they are overrunning it. Without spending any extra money, and just by thinking about the situation, it could be improved and made safer. I wish they would remove this hazard.

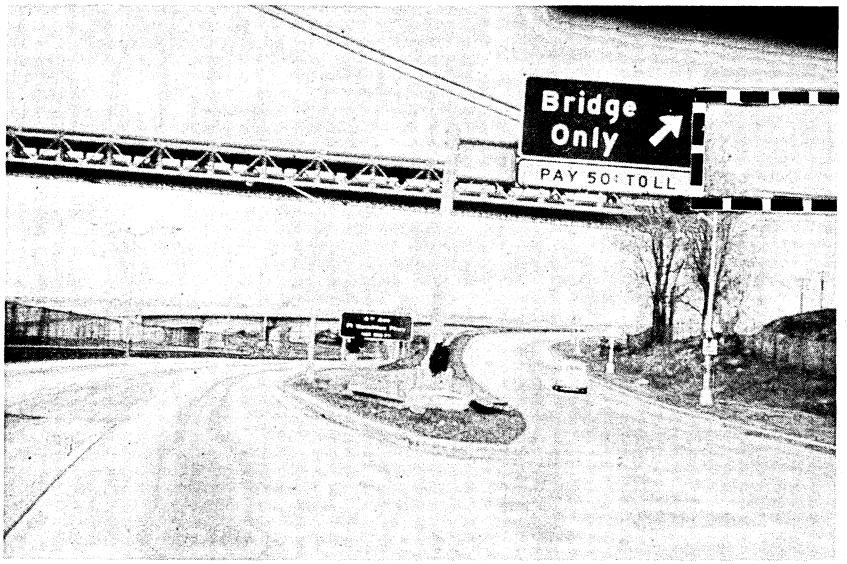
Here you see where they did something similar to what I recommended. Keep the thing on the right. And you can see the gore area,

there was a light there, somebody smashed it. It could have been the stanchion they hit.

This is another shot of the gore area, same spot. Even the light poles should be considered for the right side.



Mr. BLATNIK. What happened here?
Mr. LINKO. Where the X is, there was a light pole.
Mr. BLATNIK. The light was where the X is?
Mr. LINKO. That is right.
Also our entrance gores are saturated. I have a marking at the upper right where I think a sign should be in advance, so you can read it ahead of time.



You should be able to read it and know what you are to do before you get to it. I marked where it should be.

Here you see they did put it here. This is a proper sign installation. But even here they did a half job, because the guardrail protecting this sign that is behind the fence is 2 feet from the curb. It is hard to see. There is a spot there pointing it out. You could run into that thing and wreck your car and it is not even protecting the sign.

Mr. MAY. So we understand, that sign support is behind the fence?

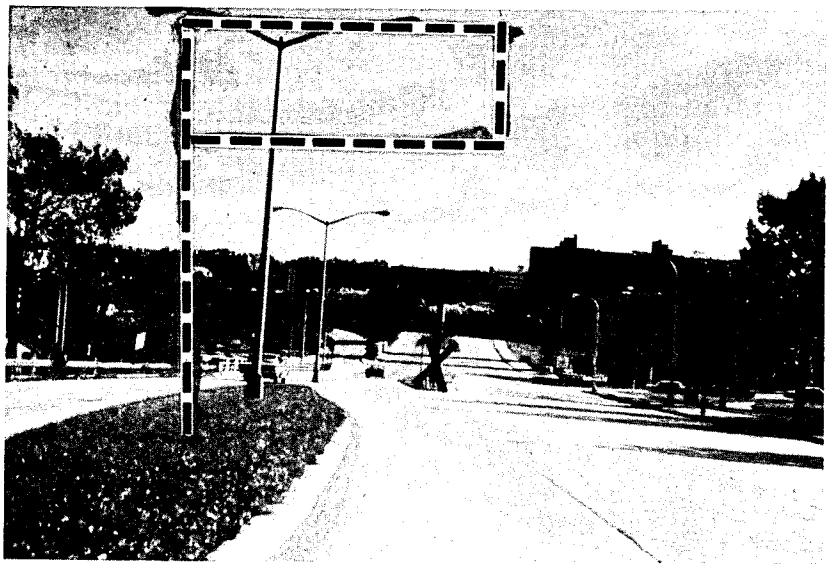
Mr. LINKO. That is right.

Mr. MAY. They have put up that hunk of guardrail to protect—what is the reason?

Mr. LINKO. I do not see any reason. That can smash the car, and it is not protecting anything.

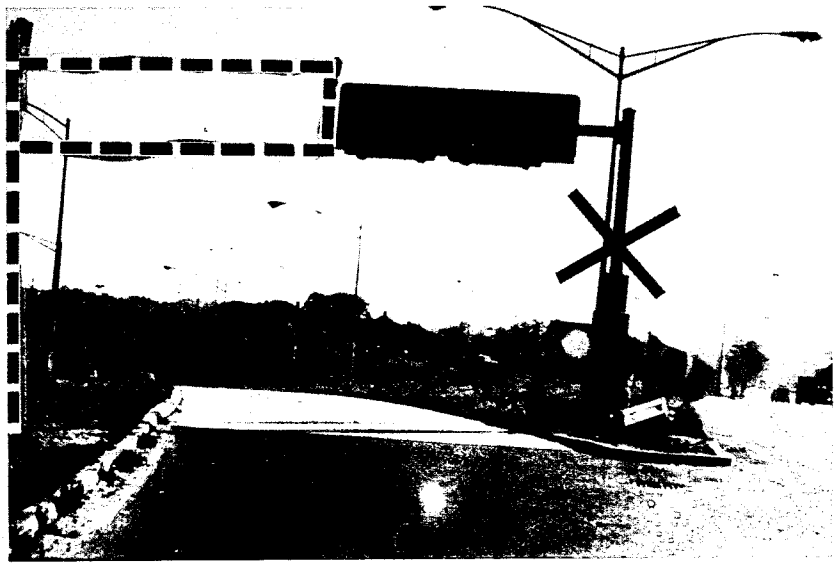
This points out, whether entrance gore areas or exits, they should be off limits to everything. If you could put this sign in advance, up there like I have marked.

You would be able to read it, see what you have to do, and continue on your way. If you made a mistake, you will not have to wipe out your car, because that gore area would be clear.

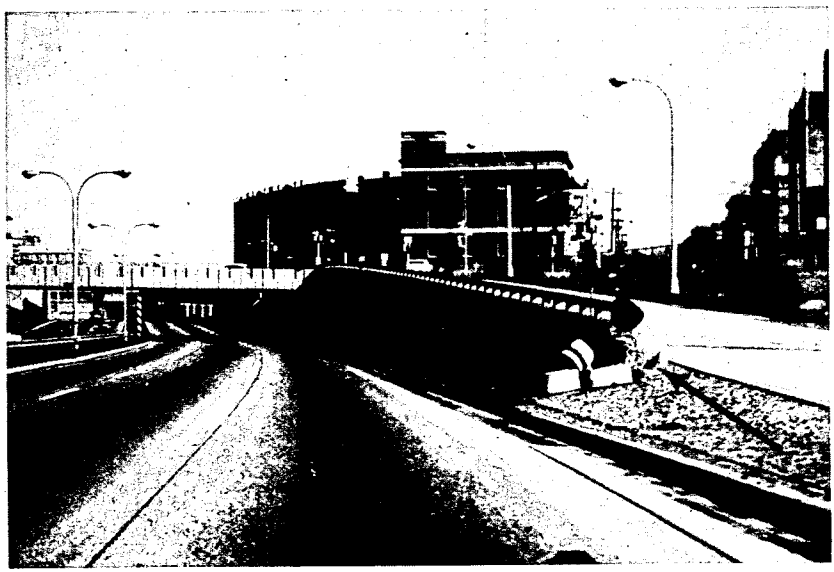


All of these have been hit.

Every one of them.

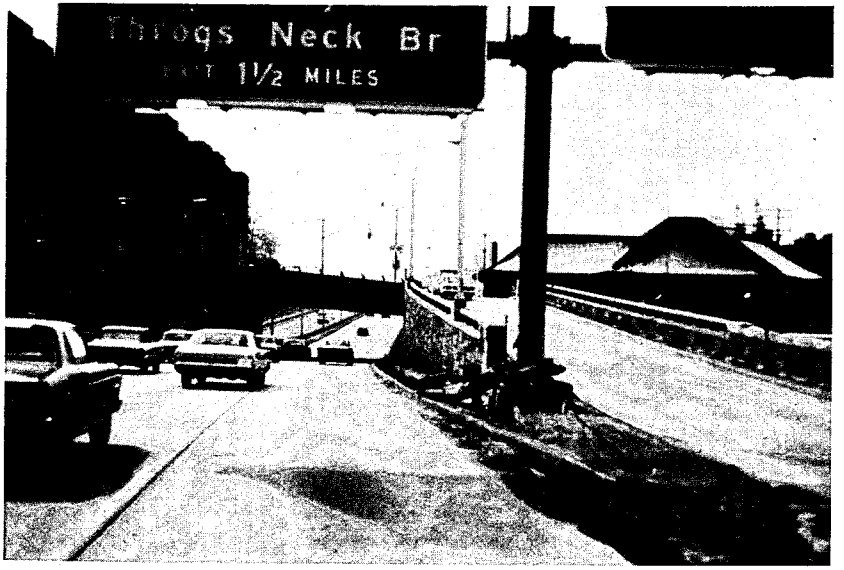


Here is another gore area with a concrete abutment, which is just as dangerous. I feel we are failing to protect these in the proper manner.

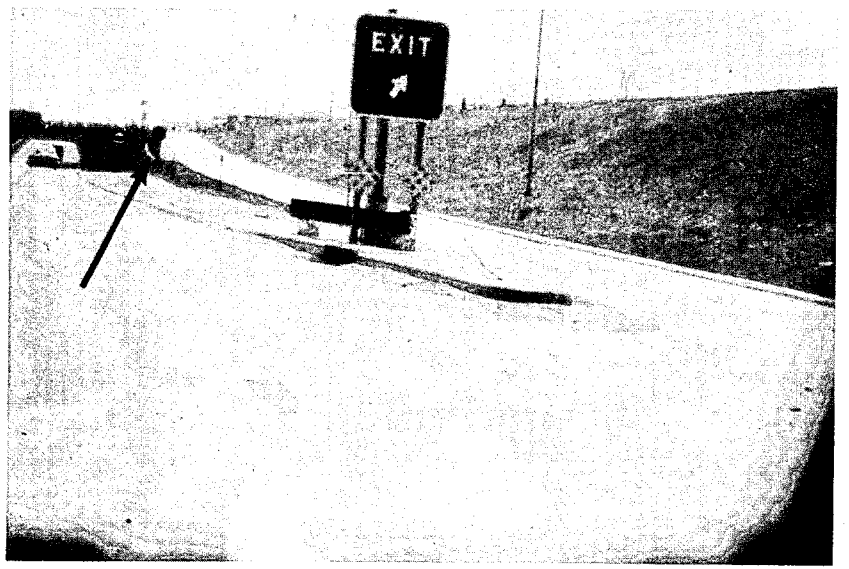


There are some places where you do have a hazard in the gore area, and it is impossible to remove it. We have been just leaving it that way. Cars have been smashing into it, wiping out the family and cars, while

we feel that we met our responsibility. Now, there is a solution to every problem, and a solution to this may be this in the next slide.



Now, disregard the stuff you see in the front. In the background you see the dot, and that is the abutment that you cannot remove. If we build an advance island like this, the decision could be made back here ahead of a clear gore area. They will never reach that area back there, so you would never have a crash. In this particular case we defeated the purpose of good design by saturating this with a lamp pole and then putting 12-inch concrete blocks to protect the light pole. This is a standard practice on our Interstate highways in this area. I

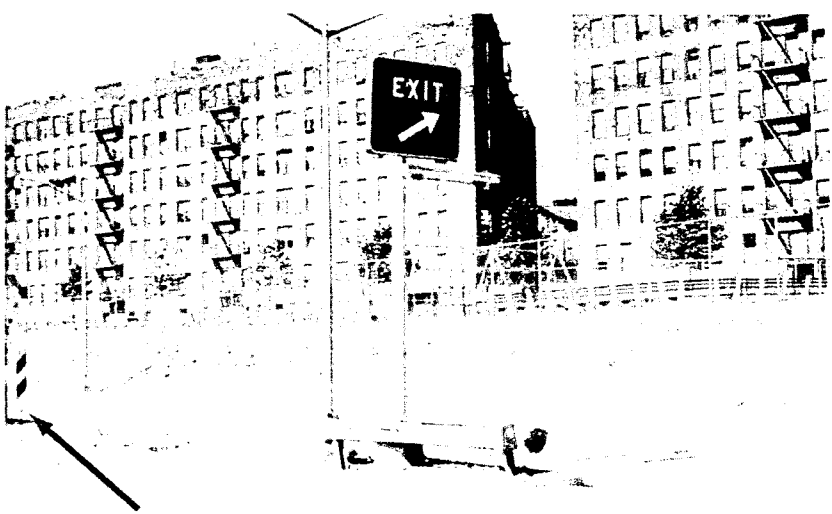


was trying to get Mr. Prisk to get a demonstration project to go to all these places, rip out all this stuff, and even taper the curbs. Give the guy a chance if he overruns this area. It is not serving any useful function. These particular highways that I am pointing out are not like an Interstate highway in the rural area, because these handle 100,000 cars a day. All the guy has to do is deviate a little bit, and that is it.

I feel we have an obligation to go back and do something about these areas.

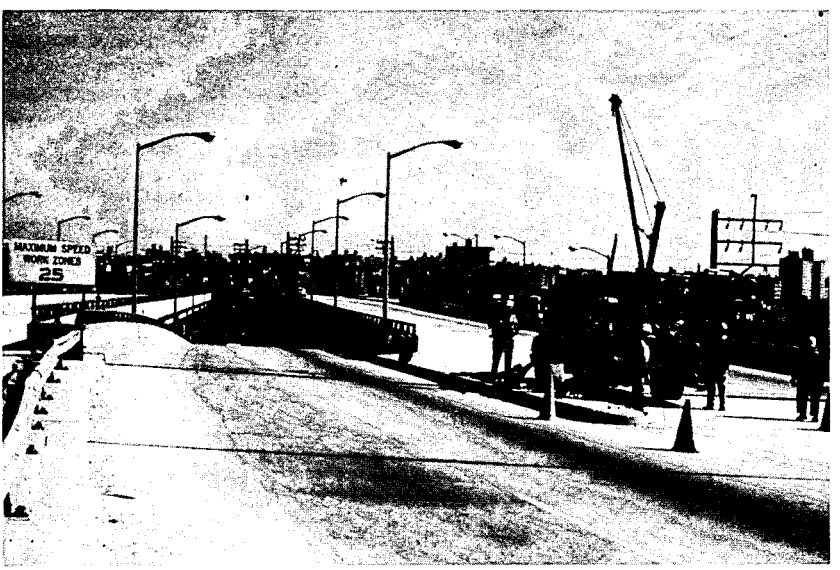
Every one of these gores has been hit.

Here you can see we had a chance to put this concrete stanchion back at the abutment, but we put it right up front where somebody is going to hit it, and somebody did.

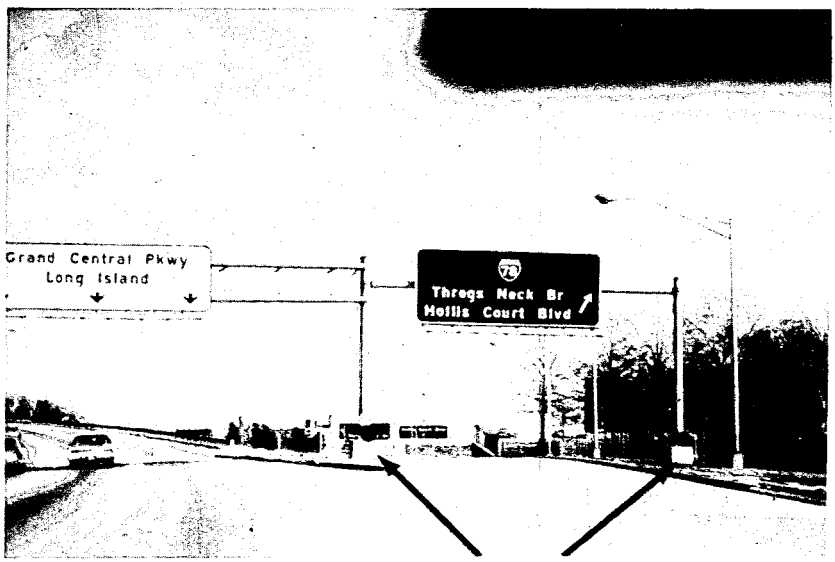


This is what happened when they hit this kind of guardrail. This is a different shot of one of the pictures I showed you. The car is completely wrecked and two people died. That can happen at any one of these points we have been watching.

This is another gore area that has been overrun.



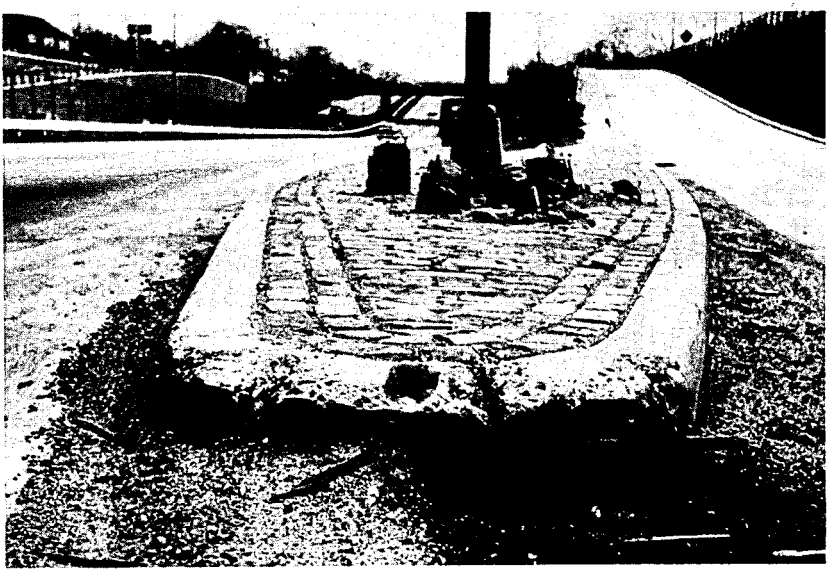
I would like to point out I think we should have a rule that whenever we pour concrete stanchions for any reason at all on our roadsides the guardrail should be installed with the concrete stanchions. This thing has been there for 2½ years, and we never put in a guardrail to protect it. They had good intentions, but we should install the guardrail before we pour the block. The motorist needs some protection.



These things are constantly being hit, as you see here.

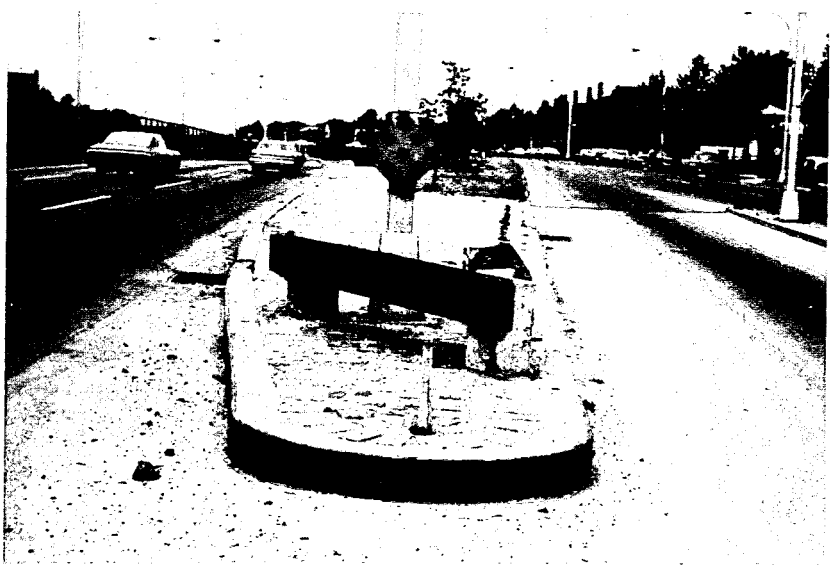
Here is a view of light posts. Here you have an easy-knockdown light pole and concrete stanchions protecting it. They have been hit.

This is what I asked the Office of Highway Safety to clear. I asked them to get a project going to taper this curb off. This is a killer. You could be riding along, 60 miles an hour, and if you have a tapered curb you would get a second chance. But once you hit this, it causes unnecessary damage, and maybe three or four cars are involved. If this curb is tapered, and we would clear all this junk in that gore, it would be much safer.



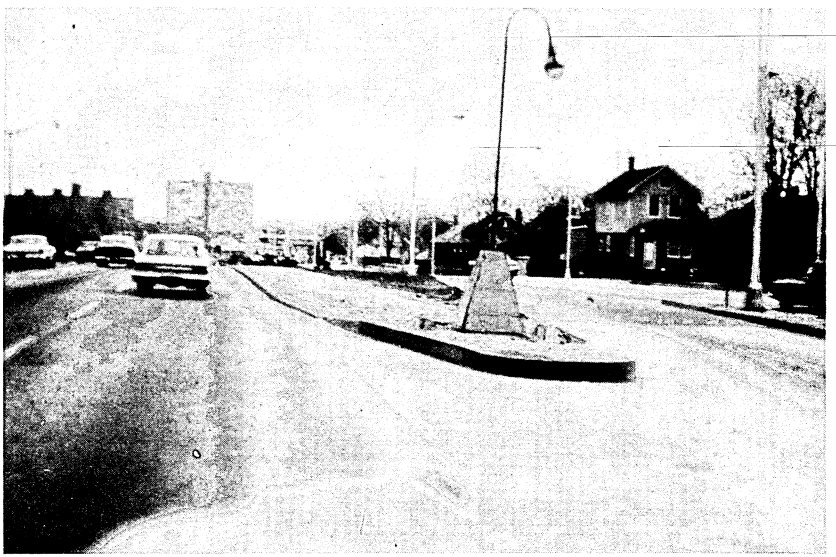
Here is another one. You see, that rail would never give somebody a chance to knock down an easy-knock-down light pole and keep on going.

This is a standard practice in my area. It is serving no purpose but to wreck the car. You have an easy-knock-down light pole but everything is designed to wreck the car.

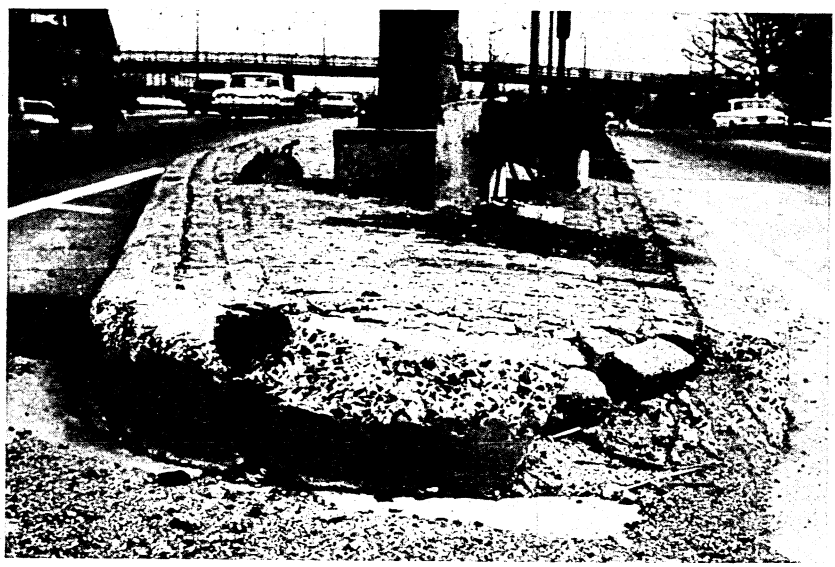


Here is a closeup.

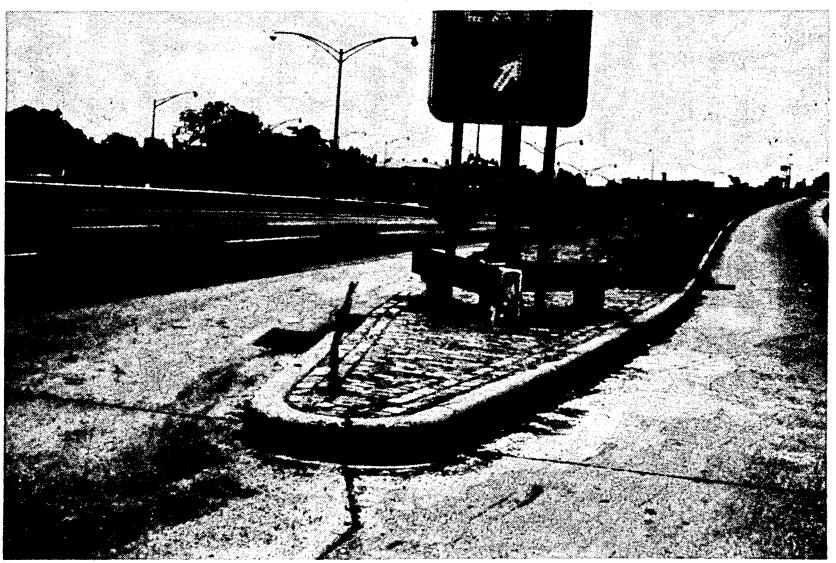
Every one of these things has been hit.



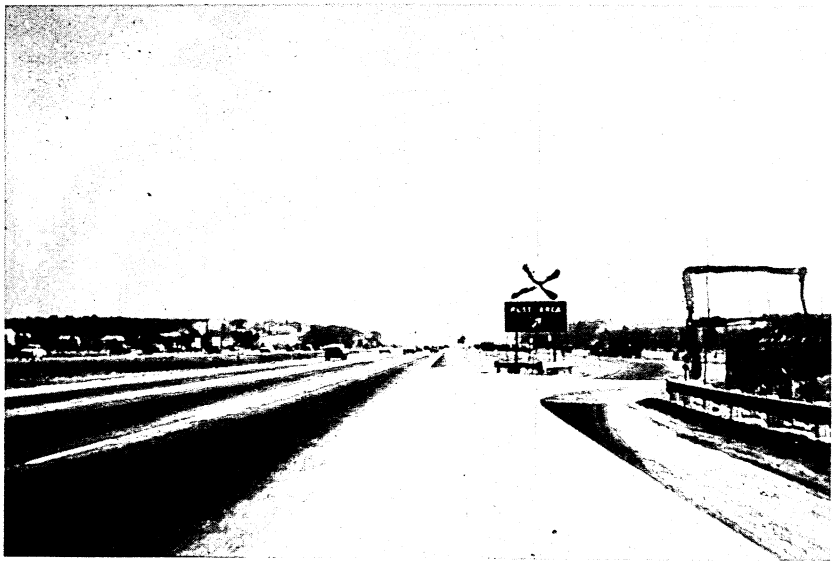
Because you can take a look at these things—well, they are chopping away at the tires.



I have a couple hundred slides that I will never get a chance to show you.



Here it says "Rest Area," and the sign could have been put on the righthand side of the guardrail. There are two concrete blocks right beneath that guardrail. If you hit that, you will really be put to rest.



Mr. BLATNIK. Mr. Linko, I thank you for appearing, and you will be appearing again in future hearings.

To summarize briefly, we have seen what an alert and intelligent layman was able to observe in the way of unnecessary hazards and poor design in his native area. I am impressed by the acuteness and the validity of what he has evaluated. To be frank, in all the years I have been driving, I thought I was fairly safety conscious, about as much as the average good driver. I must confess that I was missing over 80 or 90 percent of these hazards and unaware of them. The tragedy and pity is that we have these deadly and lethal obstacles all around us, especially in the gore areas which you described.

You see what they do to the unsuspecting motorist, who is unaware of the deadliness of these obstacles. It has been astonishing to learn that these hazards are as widespread as they are dangerous. These hazards exist from coast to coast. Further, evidence that something is tragically wrong in the design area is the testimony we have heard to the effect that mistakes of the past have been carried over, repeatedly and consistently, to even our newest roads.

Many of the hazards Mr. Linko has pointed out exist on new or recently opened segments of the modern Interstate System itself. It has been shown that not only would it not have cost more to construct some of these projects safely but in many cases they could have been built more safely for much less money.

Is that not true, Mr. Linko?

Mr. LINKO. That is right; 90 percent of my program points out that it could have been done at the same cost or less.

Mr. BLATNIK. You are not even pleading to make the highway safer—you just say, please leave them alone, do not clutter them up with these deadly obstacles——

Mr. LINKO. Even if it cost a few dollars more. The first time it is hit and it has to be repaired—the few dollars you save is wiped out.

Mr. BLATNIK. Many sign structures costing thousands of dollars apiece could have been eliminated entirely, by placing the signs on existing bridge structures. In addition to the dollars saved, greater safety would have resulted, obviously.

Overdesigned supports, concrete bridge ends which have no function, cluttered gore areas and roadside areas that look like military tank traps, all have been shown to be lethal in nature. The fact that they are costly and often unnecessary merely aggravates the situation.

Somewhere, the people responsible for design have subordinated safety to other considerations. It is incredible, but true.

The emphasis of these hearings, at further sessions, will be upon those things which can and absolutely must be done to correct the conditions shown by today's testimony and pictorial presentation.

Mr. Linko, I know that I speak for all members of the committee and for the staff and for those who have been in the audience, participating in this morning's presentation, in expressing our appreciation and our commendation for a very skillful presentation before a committee of Congress.

You have been most helpful, and we thank you.

Mr. CRAMER. I would like to join in expressing my appreciation to Mr. Linko who, as the chairman has suggested, as Mr. John Q. Citizen, has seen fit on his own to study some of these matters. He has shown a very fine analysis of the problem.

I think it will help alert this committee and the Congress and perhaps many other people to the safety hazards that exist. I congratulate you and thank you for the fine service that you have rendered.

It seems to me that in a number of instances—for what reason I don't know, there does not seem to be any valid reason—they are in effect designing death traps, despite the fact that the law requires the safety aspect of highway design be given equal consideration to other aspects. From what we have seen so far, it would appear that safety design standards have been downgraded, second rated, to esthetics, to planting trees, to beautification and what-have-you.

BLATNIK. Would the gentleman yield at this point? It is a good point.

Mr. CRAMER. Yes, I yield.

Mr. BLATNIK. What really aggravates me and frightens me, I think in some instances it seems more than just downgrading the safety aspects of highway design, but it is the complete unawareness of the need for safety or that this is a dangerous situation, and that maintenance work by State, Federal, municipal highway departments and other people should be most conscious of hazard conditions.

Mr. CRAMER. I agree with the chairman. It appears that those who are responsible, State and Federal, have been oblivious to the safety hazards that are being built into the highways. I gather from the staff, this New York information is symbolic of what is being done throughout the Nation. Isn't that true, Mr. Prisk? Are these not ex-

amples of what is being built, the type of death traps being built in the highway system today, all over the country? This is not just New York?

Mr. PRISK. This is reasonably correct, yes.

Mr. CRAMER. So it is a nationwide problem. The designers and those responsible for carrying out the highway program have been somewhat oblivious to the necessity to build a safe highway as it relates to some of these obstructions, obstacles, and death traps that have been evidenced here today and yesterday.

Now, admittedly, I think the record should show as well, Mr. Prisk, that there have been a number of safety features built into the highways; have there not?

Mr. PRISK. Definitely so.

Mr. CRAMER. As it relates to certain design aspects, there have been have there not, some other areas in which safety has been given consideration. Give us a few examples of those.

Mr. PRISK. I think access control itself is one. Certainly the improvement in alinement and curvature, separation of grades, separation of opposing roadways, and the gradual development of techniques of handling traffic in given situations.

Mr. CRAMER. You see, when this system was evolved, the Interstate particularly back in 1956, one of the biggest selling points, in addition to defense and the commerce that would result and adequate transportation and what-have-you, was safety. We were assured when these highways were completed that they could contemplate saving 8,000 lives a year. It appears to me that each of these safety hazards built into the highways reduces the possibility of saving those lives.

One of the principal selling points for this entire program—now going on about $50 billion—was to save lives. If we are not actually building the highways to do that, we are not doing our duty. Perhaps this Safety Act passed last year, plus these hearings, will pinpoint what else needs to be done.

Mr. BLATNIK. Thank you, Mr. Linko, and thank you, Mr. Prisk. The hearings for today are adjourned and the hearings will be resumed, and the committee will meet at 10 o'clock tomorrow morning.

(Whereupon, at 12:35 p.m., the subcommittee recessed, to reconvene at 10 a.m., Thursday, May 25, 1967.)

HIGHWAY SAFETY, DESIGN AND OPERATIONS

Roadside Hazards

THURSDAY, MAY 25, 1967

HOUSE OF REPRESENTATIVES,
SPECIAL SUBCOMMITTEE ON THE FEDERAL-AID HIGHWAY
PROGRAM OF THE COMMITTEE ON PUBLIC WORKS,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10:16 a.m., in room 2167, Rayburn Building, Hon. John A. Blatnik, chairman, presiding.

Present: Messrs. Fallon (Public Works chairman), Blatnik (subcommittee chairman), Kluczynski, McCarthy, Cramer, Cleveland, McEwen, Schadeberg, Zion, McDonald, Denney, and Esch.

Staff present: (Same as previous day.)

Mr. BLATNIK. The Special Subcommittee on the Federal-Aid Highway Program of the House Public Works Committee will please come to order.

At the conclusion of yesterday's session, we heard convincing testimony as to the existence of certain design deficiencies in our Nation's highways, including even some of our most recently completed Federal-aid roads.

The conditions described by Mr. Joseph Linko, our first witness, were limited geographically to the Greater New York area in his testimony because New York is where the witness lives and is, therefore, the scene of most of the research he performed in his unusual and commendable one-man inquiry. However, as our staff investigation has disclosed, the conditions described by Mr. Linko are varied and exist from coast to coast.

As we resume our hearings today, we will hear testimony from Dr. Donald F. Huelke, of the University of Michigan Medical School, Ann Arbor, Mich. An associate professor of anatomy, Dr. Huelke's interest in the cause and results of automobile crashes is of long standing. There is a lot more to be said about Dr. Huelke. We appreciate your appearance here.

We are very pleased to have with us our friend and colleague, Congressman Marvin Esch, from Ann Arbor, Mich., who is a personal friend and associate of our star witness of today.

Congressman, would you take over and make your presentation, make the introduction, as you wish?

Mr. ESCH. Thank you very much, Mr. Chairman, and members of the committee.

I am honored to be before this committee. I would like to associate myself with the remarks of the chairman and the other members of the committee as you begin this important hearing. I am also

most honored to have an opportunity to introduce and to give you a little bit more background on Dr. Huelke.

Dr. Huelke, in previous years, had a grant from the Public Health Service to study the causes of fatal accidents. This took him throughout our own district in which he and an associate, Dr. Paul Gikas, studied on the scene the direct cause of fatal accidents over an extended period of time. He will speak of this work that grew out of not only the internal factors inside of an automobile, but the external factors in terms of road hazards that exist on our highways.

May I suggest to the members of the committee that as you hear the expert testimony of our witness this morning, we reflect on the need not only to develop more effective ways of planning and design of our highway system, but that we also look at the death traps that exist today in the current highway system that we have, and determine what remedies we may make of an intermediate nature.

It was in this regard that we became more closely associated with our witness this morning.

There was one particular stretch of an interstate highway, I–94, which Dr. Huelke and I called the "death corridor," because there was a large number of fatal accidents within a very brief section of that highway. Subsequent to calling attention to it, we did have emergency funds to erect a median barrier to alleviate the problem of crossover of the median strip.

Although the highway was scheduled for updating in 1969, there may well have been 30 to 40 additional deaths during that time.

I call the attention of the committee to this illustration because it points up the seriousness not only of our long-range planning, but the need for us to examine the present Interstate System to bring it up to more reasonable and safer standards, and to move in with intermediate programs which might be needed.

Dr. Huelke, I think, has gained national prominence in the field of highway safety and his testimony today I think will perhaps be shocking, but perhaps will be most meaningful to you as you recognize the expertise which he brings to your committee.

So, Dr. Huelke, we are very pleased to have you with us today.

Dr. HUELKE. Thank you very much.

Mr. BLATNIK. Dr. Huelke, before you proceed, I want to certainly express the genuine appreciation and thanks of the entire committee, certainly the Chair, for the splendid cooperation you have given this staff. We do feel this whole subject area is one of tremendous significance, and it is almost shocking the way this whole matter has been overlooked for the 10 years we have been engaged in the largest peacetime public works program in history, which is primarily designed to save literally thousands of lives. At least several of these thousands were needlessly lost because of miscalculations or errors or, through inadvertence, obstacles were put in places where they greatly increased the probability of contact, of impact, of automobile collisions.

Dr. Huelke, in your case, of course, as we do with all witnesses, we would ask that you take the oath. Would you please stand and raise your right hand. Do you solemnly swear that the testimony you are about to give before this subcommittee will be the truth, the whole truth, and nothing but the truth, so help you God?

Dr. HUELKE. I do.

Mr. BLATNIK. Please be seated, Doctor.

Mr. May.

Mr. W. MAY. Doctor, for the benefit of the committee, would you tell us about your background, how you became interested in the subject matter.

TESTIMONY OF DR. DONALD F. HUELKE, UNIVERSITY OF MICHIGAN MEDICAL SCHOOL, ANN ARBOR, MICH., AND CHARLES W. PRISK, DEPUTY DIRECTOR, OFFICE OF TRAFFIC OPERATIONS, BUREAU OF PUBLIC ROADS, U.S. DEPARTMENT OF TRANSPORTATION

Dr. HUELKE. Approximately 10 years ago, I began a study on biomechanics of fracture production. In other words, how do bones break. This is a very small subject and it was actually only to the problem of the lower jaw.

Mr. W. MAY. Are you a medical doctor?

Dr. HUELKE. No, I am not. I am a Ph. D. in anatomy. I have a doctor's degree in human anatomy.

Mr. W. MAY. Did you go to school in Ann Arbor, Mich.?

Dr. HUELKE. Yes, for my Ph. D. work. I received my bachelor degree from the University of Illinois.

Mr. W. MAY. Thank you.

Dr. HUELKE. At the time I was studying fractures of the lower jaw, one of the things we were doing was to review the clinical cases at the hospital, and it became obvious that over 50 percent of the fractures of the lower jaw were produced in automobile accidents. From this beginning, I started wondering what then, in automobile accidents is causing these types of injuries.

So, in order to study the effect of full body trauma, I thought that the automobile accident would be one way to do so.

To try and save time and not have to follow every injury-producing automobile accident, I then went out to only the fatal accidents.

We then received a grant from the U.S. Public Health Service, the Division of Accident Prevention, which funded this project for 4 years. The project began at about November 1, 1961, and it terminated 4 years later.

Presently I have a grant from the same source to investigate nonfatality accidents in recent model cars in which people are injured but not killed, and so to date I have examined some 200 fatal automobile accidents in which approximately 270 people were killed, and, in addition, close to 300 nonfatality accidents in which people have been injured.

As an aside from this, when we get to the accident scene, we are on call with the police 24 hours, day and night. When we get to the scene, we are interested in determining what happened and what killed or injured the individual.

We take photographs at the scene of skidmarks, the roadway, the vehicles, and frequently of the occupants. And then, after we find out what the autopsy results indicate was the cause of death, we go back

to the vehicle and start correlating the crushed chest with the steering wheel, or ejection from the vehicle.

It became all too apparent to me many of these people were striking the immovable objects along the edge of the road, which not necessarily needed to be there, or which should have been protected in some way by adequate protective means.

One of the things that I did notice, as Congressman Esch mentioned, is on I–94, around Ann Arbor. In a 4-year period, we had 20 percent of all deaths on this I–94 expressway with 10 percent of the deaths due to cross-median accidents; in other words, one vehicle crossing the grassy stretch separating the two lanes of traffic.

It was a year ago in Lansing that I testified to this point, and Congressman Esch was there and he was forceful enough in convincing Governor Romney and Mr. Hill, head of the highway department, that this is truly an emergency situation, a true death corridor; it has just been the last month that 7 miles of guardrail have been installed on this expressway. And since the installation, there have been repeated hits on this guardrail of vehicles out of control, attempting to cross the median, but who have not succeeded because of this guardrail situation.

I think it is going to be a lifesaver. I think we are going to save between five and 10 lives a year on the 7-mile strip of highway because of the guardrail installation.

Mr. W. MAY. How far away from your home base did you go to analyze these accidents?

Dr. HUELKE. Wherever the police asked me to go from our area. Now, I am on call with the Ann Arbor Police, with the Sheriff's Department of Washetenaw County, and the State police at Ypsilanti. The State police do obviously cross county lines. In travel time, the farthest accident to the scene when I was called was 45 minutes away at night by expressway, so this did put us out a considerable distance from what you might say "home base."

Mr. W. MAY. Would you proceed.

Dr. HUEKLE. What I would like to do, then, this morning is to talk about the problem of the highway in terms of collision experience that we have had, and not necessarily talk only the Federal-aid program, but show you the same sorts of things in secondary areas, as well. I would like to develop this theme, then, of the immovable objects, the obstacles, and the lack of protection which has killed many people in our State.

So if I may have the lights out and the projector on, we could get to the first case.

This is a police photo from an on-scene accident. The vehicle seen in the ditch was traveling toward us.

This is a secondary road. It is not paved. It is a gravel surface. But the night before, it had rained and it came down as sleet, and then it froze, so the highway was very slippery. Even the gravel road here

was covered with ice, and as the vehicle came around the turn, the driver was traveling too fast for conditions.

Notice I did not say he was speeding, because in my estimation, speed indicates he is traveling faster than the posted limit. But this man made the mistake of traveling a little too fast on this icy surface around the curve, so we have a driver error.

As he came around the curve, he slid off and went into the ditch along the road edge.

Notice here there is no shoulder to this roadway, and notice the very deep drainage ditch along the road edge.

The ironic part of this thing is the fact that this is a nonfunctional drainage ditch, its function having been lost by a subdivision that is to the left, and in the background with service drives, making this ditch just a deep ditch.

He went off into the ditch as you can see, and struck with the left front fender in that area, causing the door to pop open. He was ejected and was killed.

Now, we have a problem with automotive design in that the car door opened; but the important thing is that had this been a relatively flat area, he could have made his mistake—I am not making any excuse for the vehicle, but even with his mistake, he could have survived this accident.

The other mistake that he made is that there was a seat belt available in the car. He did not wear it this day.

This is I–95 Expressway near Ypsilanti, a town that is not too far from us. Notice the roadway is a 70-mile-an-hour dual expressway. The median in the center is 35 feet wide. It is flat.

At 70 miles an hour, you are traveling at 103 feet per second, and it does not take you very much time to cross a 30-foot-wide median.

Notice on the right side there is a lake, Ford Lake by name, and there is a steep embankment off the road area down to the shore of the lake.

The only protection that is offered along this segment are these pine pillars, 6-inch-diameter pine pillars, which can be broken off at a vehicle speed of between 5 and 10 miles an hour.

Mr. W. MAY. There are no cables between those pillars?

Dr. HUELKE. No, sir.

Mr. W. MAY. All right.

Dr. HUELKE. And one evening we did have a fatal accident at this scene.

A woman was driving along when she hit this car in the rear.

A little background on this vehicle. He had stopped in Ann Arbor late at night, coming back from vacation with his family. He had "battery trouble," and his muffler had gone out on him. For a small foreign car like this, the gas station did not have a muffler. They gave him a quick charge of his battery and he was going home in the slow speed lane, as we saw in the other photograph, when he was struck in the rear. This car and the other car went through those guard posts, down to the shoreline where this car struck the two trees right at the edge of the water.

The pathetic part of this was that the three children in the back seat each received a fracture of one of their extremities. The father, who was the driver, was running around frantically throwing all the clothing—that had literally exploded out of the rear of the vehicle—looking

for his 19-month-old boy. His wife was ejected from the car and was on the opposite side, dead of a crushed skull, and had she stayed inside the vehicle, she could have survived. But also, she was holding this 19-month-old baby on her lap at the time. The child was ejected with the mother. The child landed in the water and drowned in 6 inches of water 3 feet from the shoreline—a double ejection fatality, both of which could have been prevented, again by automotive design.

Had an adequate guardrail been along that road edge, this would not have been a double fatality accident. But today I want to emphasize some of the problems of the roadside.

This tree is not on the edge of the road; this tree is in the road, and the sign says "Stop Ahead." And that is what he did, and he was killed. It happened at 10 o'clock on a Saturday morning.

When I was out at this scene, the farmer was working in his field to the right, and he was strongly berating me because of the tree. Finally I quieted him down enough to identify myself and he apologized. He thought I was from the road commission. He told me that on two separate occasions he had called the road commission to indicate people had struck this tree, ripped out a headlight or ripped off a fender, and he had pleaded with them to remove the tree.

This tree was not removed, and we have a fatal crash against it because it is 2 feet into the roadway.

Mr. W. MAY. Is that the farmer's tree?

Dr. HUELKE. No, sir. His farmhouse is nowhere near this area, so it is not a beautification tree for the esthetics of the farm area.

Mr. W. MAY. That tree is on the right-of-way of the road?

Dr. HUELKE. Yes. I then called the highway commission in our county and asked why these trees were not removed and others like them, trees on the outside of the curb that have been hit time and time again; and their answer was, "We don't have the funds to do so."

I think this is very significant, because without the funds, you cannot get the manpower nor the machinery to remove these types of trees that are struck time and time again.

About a year later, I passed this scene and the tree was marked "For Removal." So I called up the county commissioner and said, "Congratulations. I see you have funds to remove these types of trees now." He said, "Oh, no, we don't have funds; but we must do it. Those trees have Dutch elm disease."

Mr. CRAMER. He said what?

Dr. HUELKE. "That tree had Dutch elm disease." Therefore, it is being removed to stop the spread of Dutch elm disease; but they could not afford the money or time or manpower to remove these trees because they were lethal.

Mr. W. MAY. Excuse me, Doctor. Mr. Prisk, do I understand Michigan has entered into a program of tree removal alongside the highways?

Mr. PRISK. Yes. Michigan State Highway Department has started on their trunkline system in a systematic fashion to remove trees that are close to the road and constitute a hazard. Several hundred thousand trees have been removed under this program.

Dr. HUELKE. And according to Mr. McCarthy, the chief designer of Michigan's highway systems, he is very thankful for Dutch elm disease, because now they have a good excuse to start taking them down, because before people would complain that that tree was being taken down; it is a nice old tree, gives a lot of shade, lot of character to the road, and this beautification idea tends to take priority.

Now when they say it has Dutch elm disease, people are more understanding.

Mr. CRAMER. Mr. Chairman, may I ask a question?

Mr. BLATNIK. Mr. Cramer.

Mr. CRAMER. Does the staff know whether this is a Federal-aid highway or not? It does not look very much like it.

Dr. HUELKE. No, it is not; but this is the problem we see and I would like, if I may, to develop this point.

Mr. CRAMER. In just a moment.

Dr. HUELKE. Yes.

Mr. CRAMER. Mr. Prisk, does the State of Michigan have a program to plant trees for beautification purposes as well as to take them down?

Mr. PRISK. I feel sure that they do.

Mr. CRAMER. So one program is planting them and another program is taking them down; is that right?

Mr. PRISK. That is right.

Mr. CRAMER. It makes a lot of sense.

This particular tree is on the right-of-way. Obviously, by regulation or otherwise, it would not be permitted on a Federal-aid highway; is that right?

Mr. PRISK. True.

Mr. CRAMER. Actually what we are dealing with is a State-county problem, basically?

Mr. PRISK. I would say so.

Mr. CRAMER. Yes. Thank you.

Dr. HUELKE. Last year up in Lansing, when we talked about planting of trees on the outside of curves, especially, Mr. McCarthy, the chief designer of Michigan, said, "We don't do that any more." I had to point out to him that 15 minutes previous to my testimony, when I was going on an exit ramp off of a Federal-aid supported highway, I–96 by name, in the Lansing area, the road crew was out there planting trees on the outside of the curve at the very moment he said that this was not being done.

Mr. CRAMER. As Mr. Prisk indicated, that is a different program. That is a Federal program to plant trees; that is a different program.

Dr. HUELKE. Yes.

Mr. CRAMER. The other is a program to take them down. This is the program to plant trees. And that is the program we have before us now, to consider for further authorization, the program to plant these trees.

Dr. HUELKE. I believe that it is not the problem of planting the trees; it is where you plant them and how close to the roadside.

The interesting thing, and this is a typical road, this road was a very small trail about 20 years ago. They saw that it was being used more frequently, so they widened it and then put a gravel surface on it. Now this road is being upgraded and it is blacktopped, but still all of the roadside hazards are in place. The curves are just as flat as they have always been, and the problem is that now we have the higher speed roadway with all of the inherent bad characteristics of a very primitive road. We see this quite often.

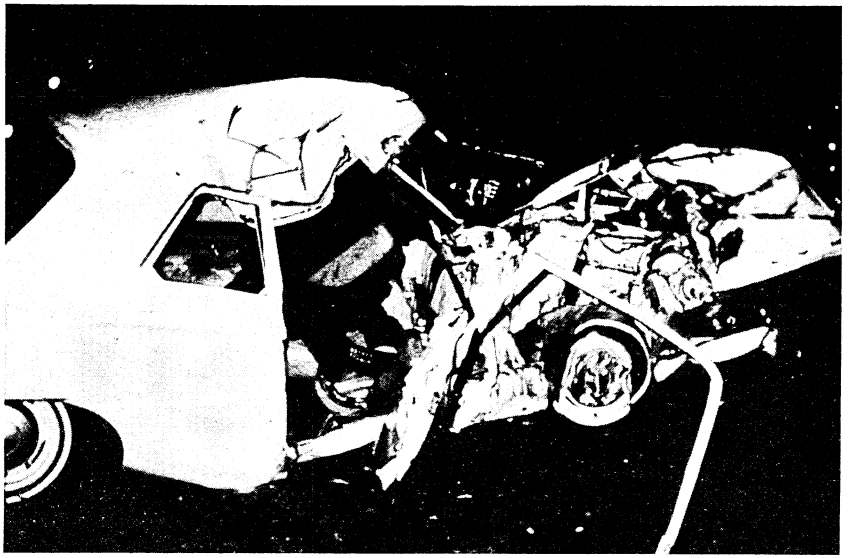
This is an example of what I call entrapment. Two male occupants of a vehicle were driving on this curve one night at a relatively high

rate of speed when they went out of control to the right, just missing the yellow sign in the distance.

Here along the road edge we have a very narrow drainage ditch and the right wheels of the vehicle became entrapped in this ditch and now are leading them on a collision course to the trees in the far distance. This is what will happen if you have a narrow type of ditch; it can be a trap to take the vehicle onward to other types of obstacles.

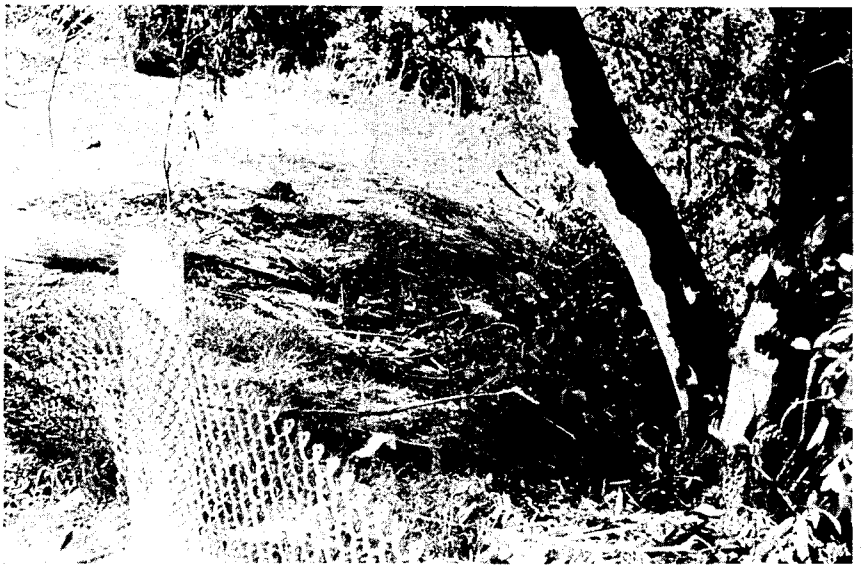
And as we approach the trees, the ditch becomes steeper, the slope is stronger, and they struck the trees and bounded back into the roadway.

And here we see the fatality in the rear seat. He was actually the driver, by the way. He ended up in the rear seat of the automobile.



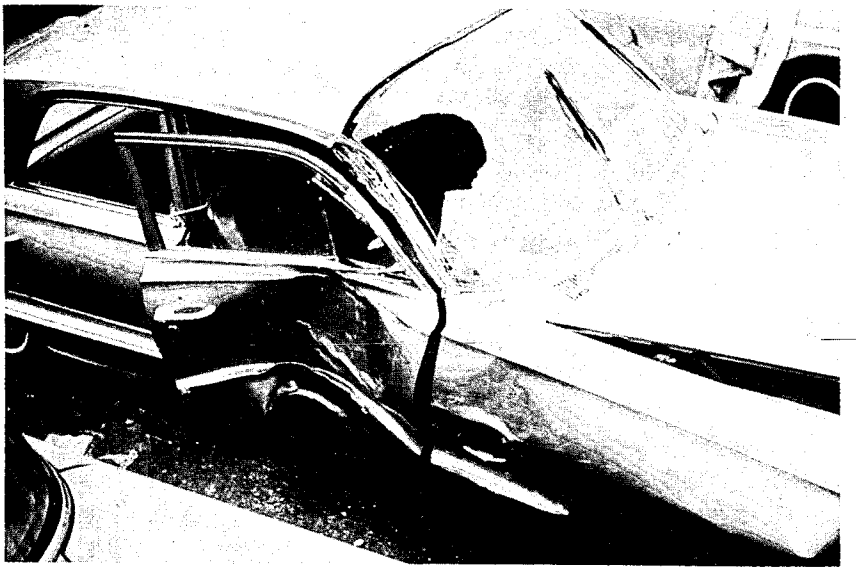
Another hazard, which is supposed to be a protective device. This is a tight right-hand curve, which is a feeder road to one of the expressways, and in the background—actually, up above off of the screen, you see the chain-link fencing between the pine pillars. They went off the road, hit this, and this led them on a collision course directly to the tree.

You can see the impact point and the lack of adequate supports of the guardrail and the chain-link fencing.



Another example of hazards close to the road. This happens to be one we had of a salesman driving home one night from Ann Arbor when he came off this crest of the road. Notice the characteristic of the road edge here. It is very badly chewed up. His wheel got off on this area. He tried to bring the car back to the roadway, but he went down the steep embankment, as we can see by the tracks in the distance, and

struck a group of trees that were fairly far from the road edge. Once he was on this downhill embankment, there was no possibility of a return to the roadway.



This is his vehicle. He was alone in the car, but the windshield and the side window support damage was done by his head for lack of restraint.

Mr. CRAMER. Go back to the tree he hit.

Dr. HUELKE. Actually, you see the series of trees here [indicating].

Mr. CRAMER. Oh, yes.

Dr. HUELKE. And they were about 30 feet off of the roadway. But the important point is this down slope is so close to the road edge that leads him on the collision course.

(At this point, Mr. Kluczynski assumed the chair.)

Mr. CRAMER. I want to ask you a question, Mr. Prisk. You indicated yesterday, did you not, that the Federal regulation relating to planting trees, although presently not being observed in many instances, is supposedly to plant them beyond 30 feet from the highway itself or the right-of-way? Which is it?

Mr. PRISK. That is beyond the edge of the pavement.

Mr. CRAMER. Right. So if the witness' testimony is correct, as to distance, which I assume it is, this tree that caused this problem would not be prohibited under Federal regulations presently in existence; is that right?

Mr. PRISK. So long as it is inside 30 feet, that is correct.

Mr. CRAMER. So long as it is planted outside 30 feet?

Mr. PRISK. Outside 30 feet, yes.

Mr. CRAMER. So, so far as beautification is concerned, the planting of trees, there would be nothing to prohibit the duplication of this problem?

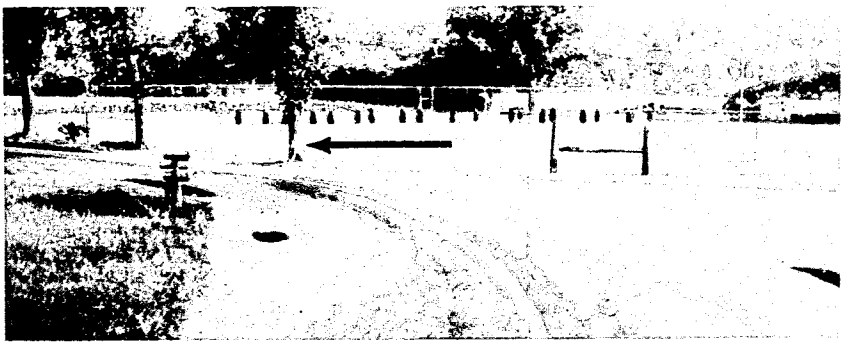
Mr. PRISK. Well, I think that I should say——

Mr. CRAMER. I mean, so far as the distance is concerned? Downgrade is another question.

Mr. PRISK. This is a minimum requirement, the 30 feet. We do not ordinarily object to planting trees beyond that distance.

Mr. CRAMER. Thank you, Mr. Chairman.

Dr. HUELKE. Here is a typical example of what we see at expressway exit ramps and secondary roads more frequently in our area. But notice the tree (arrow) just beyond the apex of the curve, and you can see it was recently hit (circle). This is a photo taken the following day after the accident. Three young people were driving down this downhill, left-hand curve and struck this tree. These are the sorts of trees now that they are removing as hazards, but we see this time and time again.



Mr. CRAMER. I see there are three old trees and I see a new one in the middle, just planted. It looks like a tree.

Dr. HUELKE. There is a series of them along there, new ones.

Mr. CRAMER. It must be part of the beautification program. They are taking down the old trees and putting up new ones?

Dr. HUELKE. Planting a little farther back, though, about five——

Mr. CRAMER. A little farther back. As far as the curve is concerned, it looks pretty close to the new ones they are planting.

Dr. HUELKE. Yes, sir; I think about five——

Mr. CRAMER. That provides a hazard to some degree. That certainly is not the place to plant a tree, is it?

Dr. HUELKE. That is right.

Mr. CRAMER. Right around a curve, right in line with the travel of the car if it gets off the road, right?

Dr. HUELKE. Right. And I see no problem in planting of shrubs or bushes in this area for beautification, because they are very absorbing, as a matter of fact, as far as impact attenuation.

The trees today that are small and little saplings are attractive, but in 10 years——

Mr. CRAMER. Where is this located?

Dr. HUELKE. Outside of Ann Arbor.

Mr. CRAMER. What system?

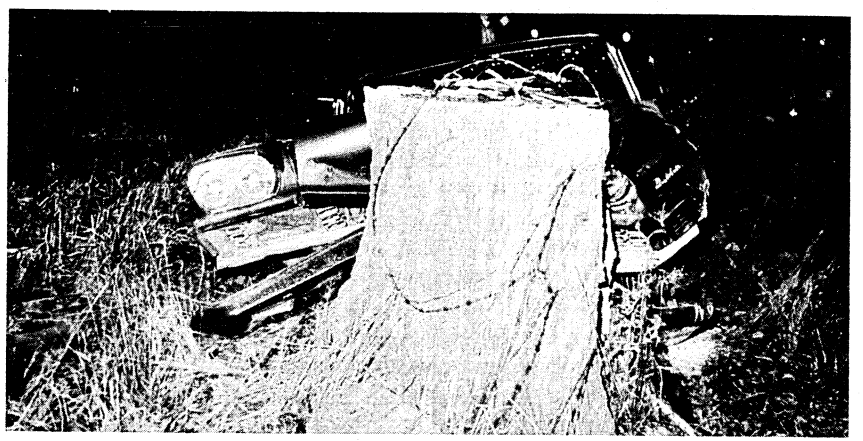
Dr. HUELKE. This is a road that is nearby an expressway. Actually it has only a street name to it, but it is used for high-speed travel.

Mr. CRAMER. It is interesting to me because there they plant the tree, and that is going to obscure one of the prettiest little lakes I have seen in some time, beautifully landscaped. It just does not seem to make much sense to me from the standpoint of safety or beauty. Of course, that is not your field.

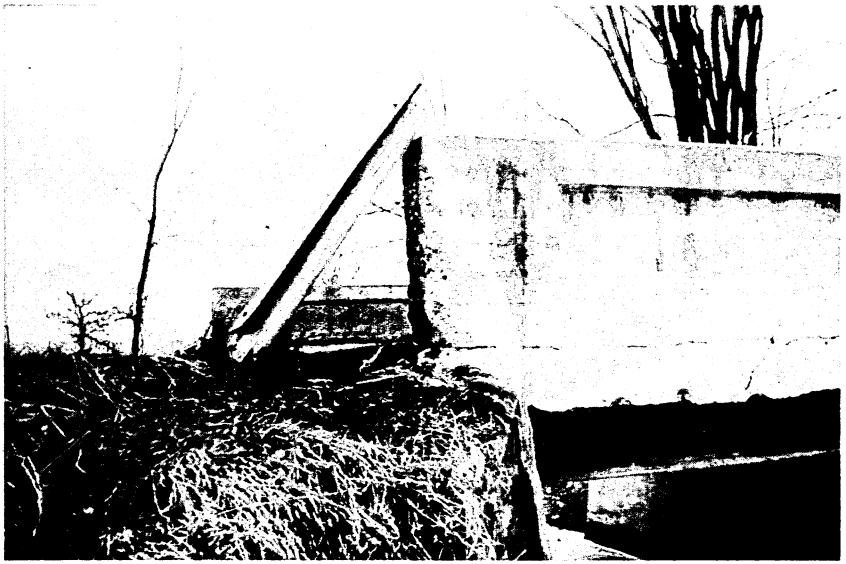
Dr. HUELKE. And this is the on-scene photograph at the time.

Now, this is part of the Michigan highway clearance program. You see that they did remove this tree—but they forgot to remove the tree stump. One night during the deer hunting season, three men were driving in a vehicle, they lost control, went off of the roadway—and this tree stump is 15 feet from the road edge—and the driver was killed. So here is a partial job of tree removal for safety and for other reasons, but they forgot to remove probably the most important part of the tree.

This is a typical treatment that we see on secondary roads, and frequently, as I will point out, on the new expressways; an almost bare end of the bridge railing, and this sign was just a diagonal sign to indicate there was an obstacle ahead, which anyone could see probably more clearly than the sign itself.

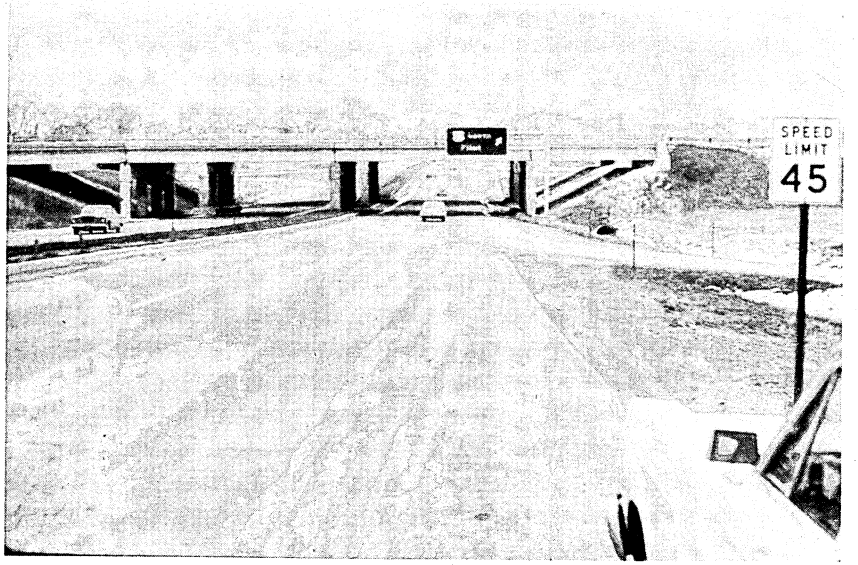


The sign was mounted on a breakaway wooden post that absorbed none of the energy.

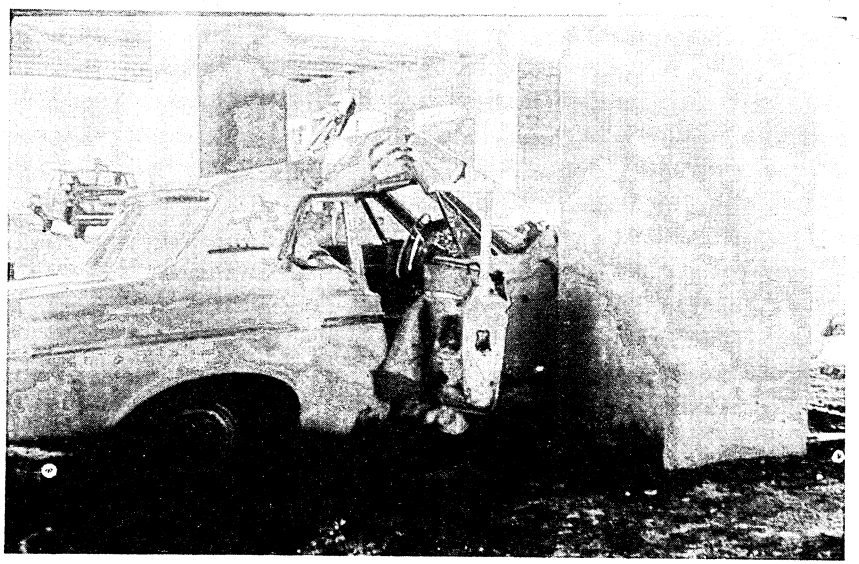


And this is the on-scene photograph of what happened. The mother was seriously injured and her baby that she held on her lap was killed. The driver had moderate to serious injuries and the child in the rear seat was not injured at all.

But the important thing is that something should be done to protect against these sorts of things, whether it is on a secondary road or not.



Now, this is the expressway system in the east part of Ann Arbor. We are on one of the roads that pass through the city, Washtenaw Avenue by name, and early one Saturday afternoon—a shopping center is just off the screen to our left—a women who was driving home saw her neighbor at the shopping center and asked the neighbor if she would like a ride home, and the neighbor said yes. They traveled down this roadway—you can still see some of the snow. She lost control under this overpass complex and skidded—not hitting the first bridge pier, but, as you will see—went into the second bridge pier, and the



neighbor was killed. The driver was not injured.

Mr. W. MAY. Have you any idea how fast she was moving?

Dr. HUELKE. This is an impact speed of, I would say, approximately 30 to 35 miles an hour.

Now look close—I was actually standing on the road to take this photograph—there is no protection, no guardrail. This pillar is no more than 10 to 12 feet from the curbing. This is one of the newer expressway systems in our area.

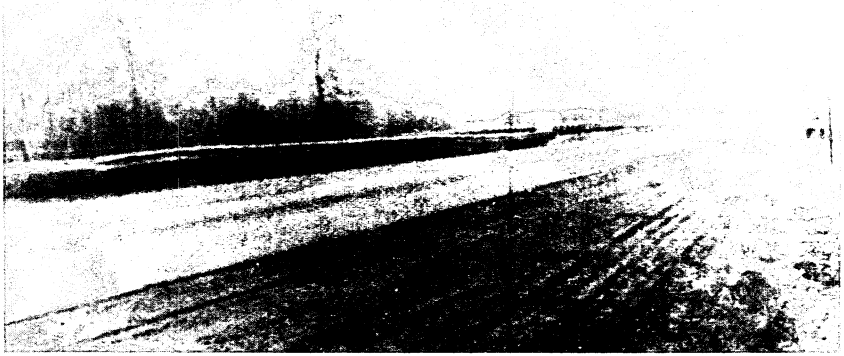
Now, this is I–94 in the Ann Arbor area. Ann Arbor actually is located up in this region [indicating], and each spot on this 20-mile stretch of expressway indicates a fatal accident and, in the circles, the number of people killed.

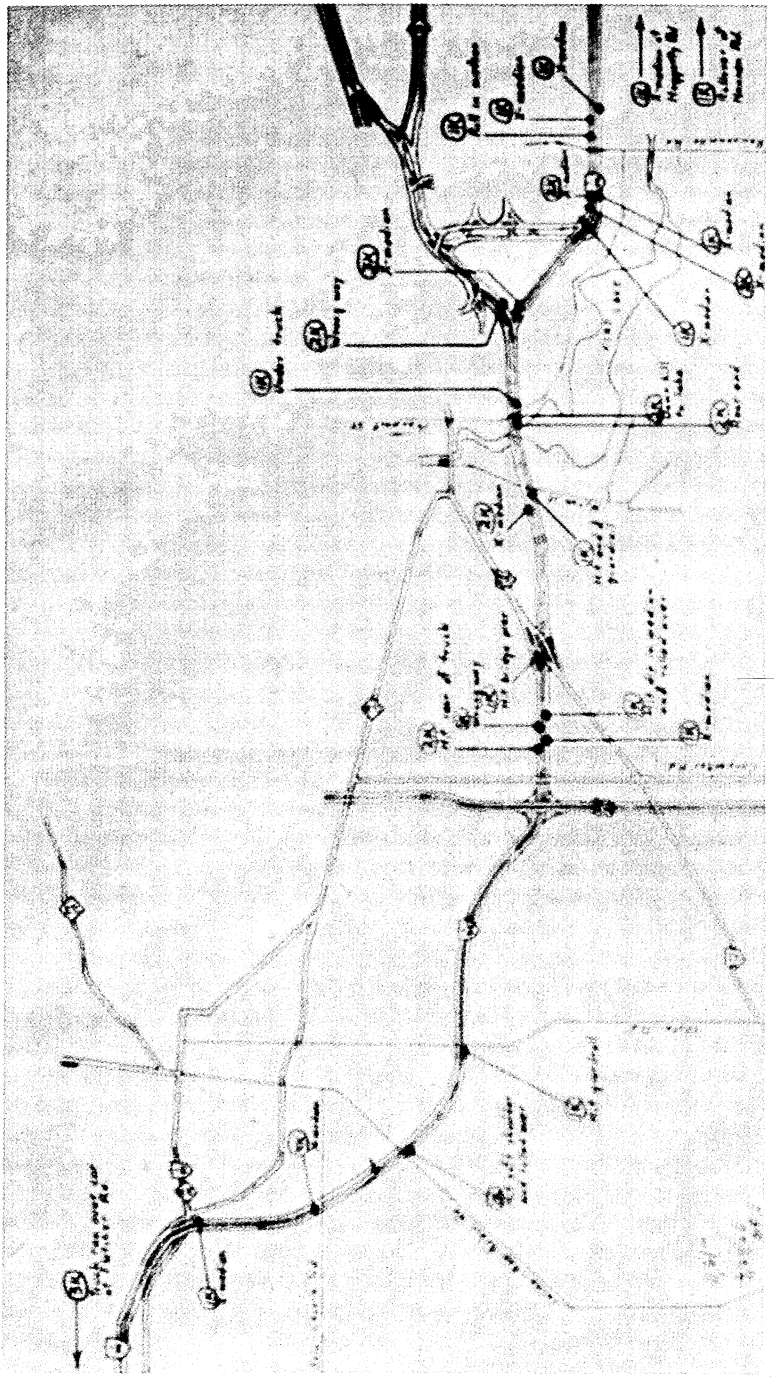
You see, we get a spread in through here. This is not a heavily traveled area [indicating] but here, because Detroit is to the right [indicating] on the photograph, we have a lot of heavy traffic located around the Willow Run area, airport, Ypsilanti.

And notice on this one curve, specifically here; one killed, two killed, one killed, one killed—just piled in this area [indicating].

And this is the "death corridor" that Congressman Esch and I were complaining about on the I–94 expressway.

This is a very interesting case. We see the guardrail over on the left side where it looks like it is a very functional guardrail, but notice the exposed end—and this is extremely important.



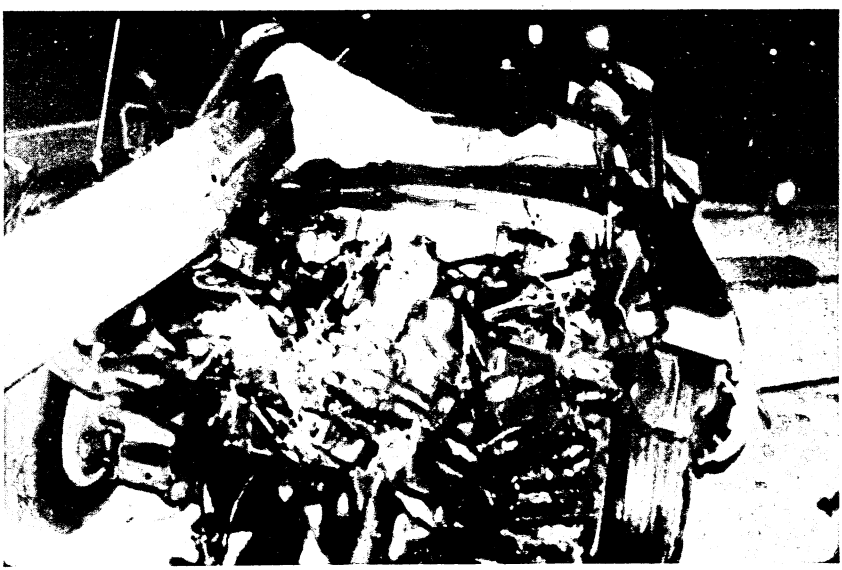


This is what we found one night. Two college students were traveling on this expressway when they hit the end of that guardrail. This car is now 144 feet into the guardrail. There are 144 feet behind them from where they first hit that guardrail. And so we have to think of protecting the ends of those guardrails.

I recommend a sloping end buried firmly into the ground to prevent this type of accident from occurring.

The passenger was killed.

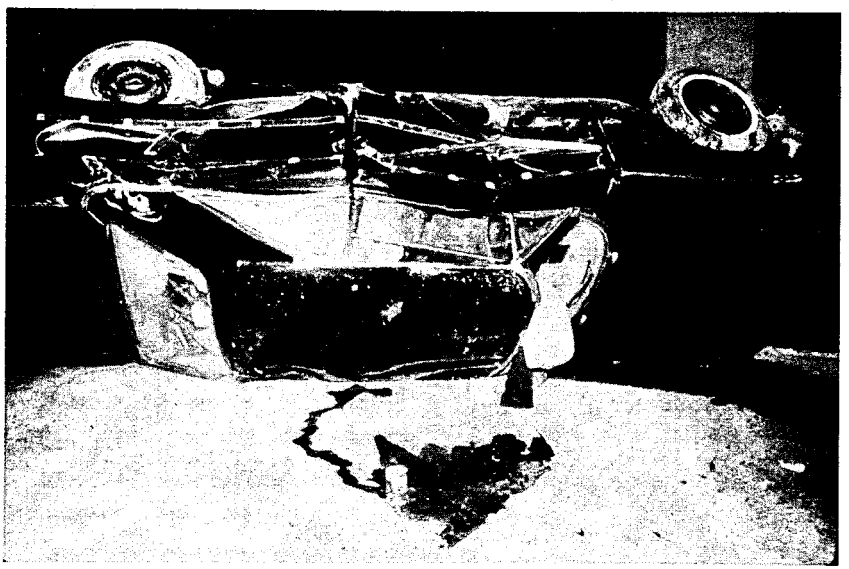
This is the front view of the car.



This was a nighttime accident. The vehicle was traveling toward us in the upper left lane, but the driver fell asleep, came across the me-

dian, and instead of staying on that side—there was no traffic around—he tried to get back to his proper lane. You see, over here on the right. He then came from behind the guardrail and struck it, deform-

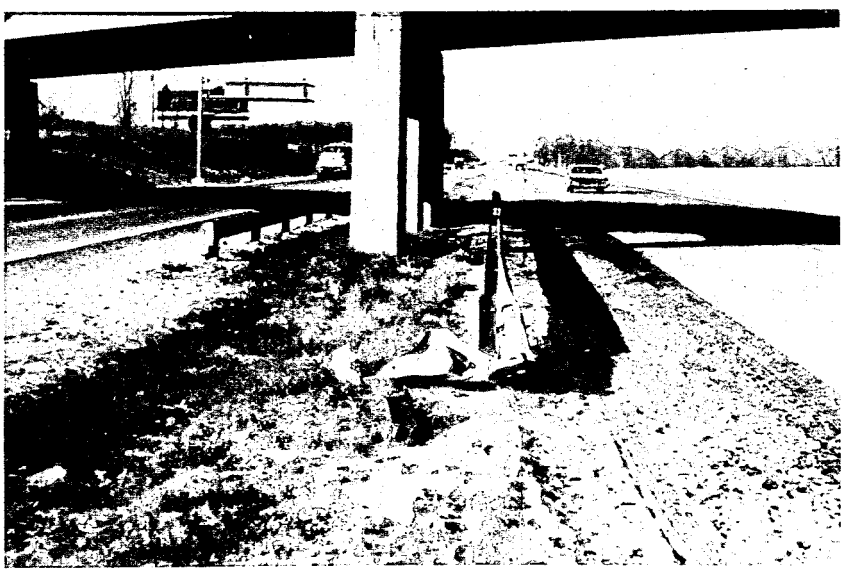
ing the guardrail. You see the end is way over here. This caused his car to roll over. He was killed.



This is another accident on I–94. Notice that in some instances in this area, we do put signs up on the overpass railing.

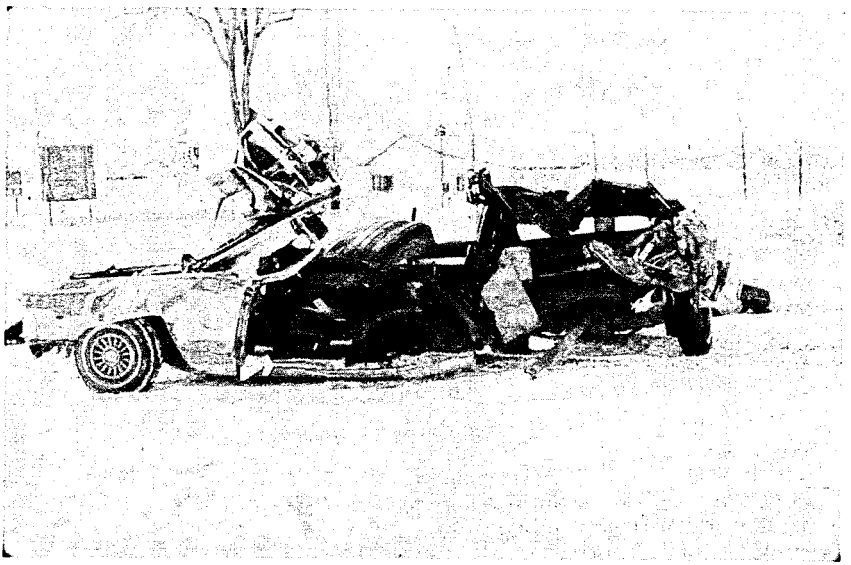
This man was traveling at about 80 miles an hour one night when he hit the end of this guardrail, but his car jumped up on the guardrail. The guardrail then led him on the collision course to these bridge piers.

See how he damaged the end of the guardrails.



And here is his car, almost completely ripped in half. He was killed.

The guardrail has been replaced in the identical manner as it was before the accident. This would have been a proper time to extend the guardrail for an adequate length, to bury the end of the guardrail, and to do a good job at the time of repair and replacement.



Mr. CLEVELAND. Mr. Chairman, may I inquire of the witness?

Mr. KLUCZYNSKI. The gentleman from New Hampshire.

Mr. CLEVELAND. Doctor, have you formed any opinion as you study these accidents as to how many of them would have been avoided had the design been proper, proper in your opinion? In other words, apparently a lot of these accidents involved high speed or involved going to sleep, or other driver error.

Dr. HUELKE. And alcohol.

Mr. CLEVELAND. Did you evolve any tentative hypothesis as to how many would have been avoided if these safety devices had been proper?

Dr. HUELKE. On the roadway only. I am just talking about the roadway safety factors, rather than car safety factors, or alcohol.

If we just talk about roadway clearance, in our area, a significant number of these people would not have hit these obstacles. But in the report which I will submit that we published in the Highway Research Board proceedings, the figure is estimated at about 15,000 to 16,000 lives a year that could possibly be saved if we would get rid of these types of obstacles.

Mr. CLEVELAND. My question is, you showed us a slide of that car that hit the tree stump; now, if that tree stump had not been there, the picture did not show, but there might have been another tree farther on. Would he have been going fast enough to hit the other tree? Or there might have been a ditch, and he might have rolled over. There might have been a fatality, anyway. This is all conjecture.

Dr. HUELKE. Yes, I see your point. What we find is so frequently beyond that tree line, at the road edge, there is a clear field. So if the tree were not there, that the individual struck, the angle of approach to the tree would be such that he would have continued out into the open field.

Mr. CLEVELAND. Eventually slowing down?

Dr. HUELKE. Yes.

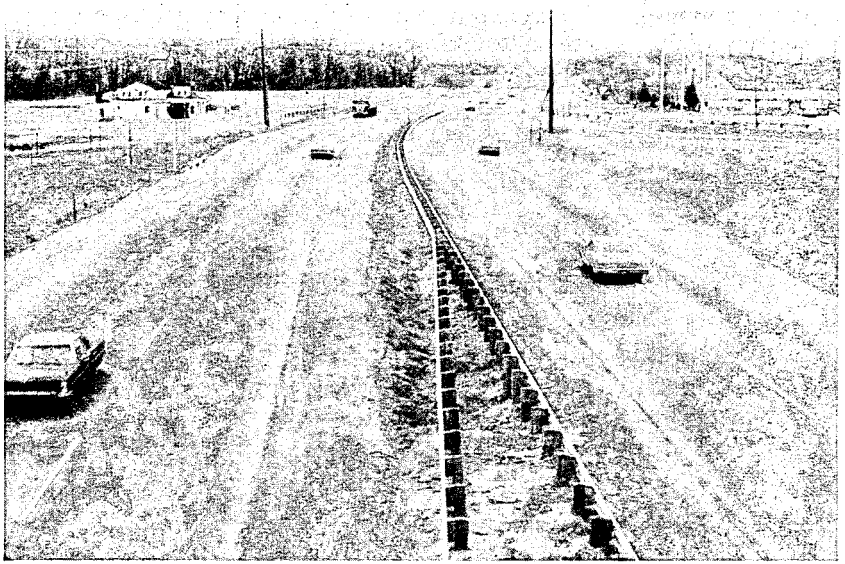
Mr. CLEVELAND. Thank you.

Dr. HUELKE. Now, there are many factors leading to automobile accidents. Alcohol has been shown to be related to automobile accidents and fatalities, specifically in probably 50 percent of the cases. But it is my feeling that up to now, although generally the highway designer has done an excellent job on these expressway systems—rounding the curves; good stable bridge piers, the bridges do not collapse; good roadways for heavy traffic—but it almost seems the philosophy has been, "Leave my paved surface, and you have to put up with whatever is there and it is your own fault."

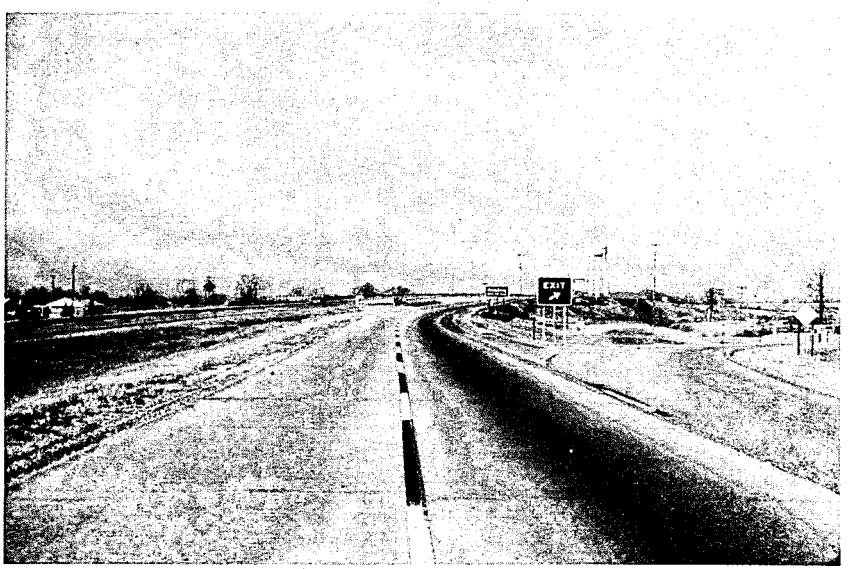
Now, cars will leave the paved surface. Whether the man is intoxicated, or whether the individual goes to sleep, whether he is under medication, loses control because of ice, snow, or fog, or maybe another car hits him, driving him into this off-road area, I do not think that the individual should then suffer because he is not on the pavement, and that what we should do is give more concentration to the off-road areas.

This is the I–94 expressway. One day a woman, who had just picked her husband up from the airport, was at the position where this truck is [indicating]. Another truck coming in the opposite direction was pulling a trailer. The trailer hook broke, because of metal fatigue; the trailer crossed this flat 35-foot-wide median and struck the car killing the woman who had just met her husband.

This is the same scene now, showing this double guardrail system that goes on and on into the distance. There is 7 miles of it. We will not see cross median accidents in this area any more, and I am sure that this is a truly lifesaving construction area.



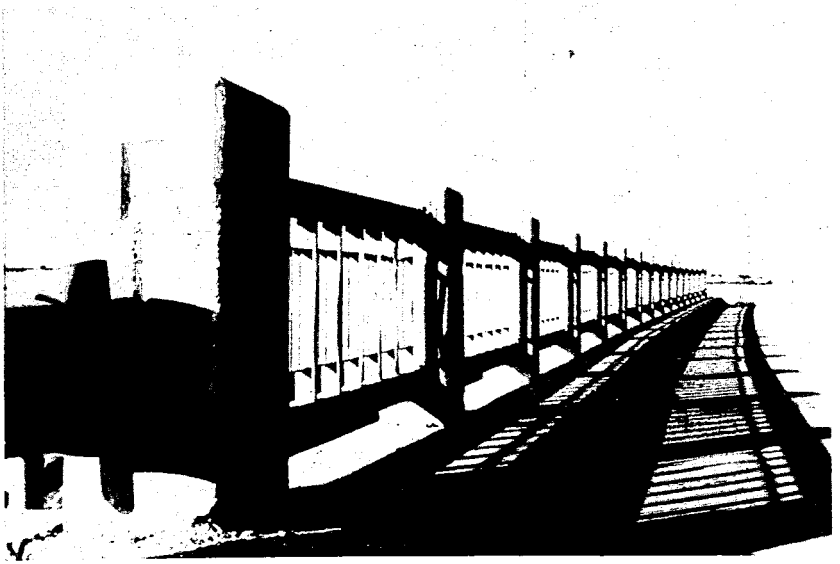
This is another expressway in the Ann Arbor area and the "Exit" sign is well marked. The gore area behind it is fairly clear. Although this one is fairly clear, they often seem to just dump the earth in there and flatten it a little bit and this is quite hilly. It is not as flat as this area to the right of the roadway [indicating], as I will show you in some other pictures.



This is the bridge that we saw in the background—let me point this out to you. Here it is at a very gentle curve.

Look at the design of this bridge. It is for esthetics more than anything else. We have an 8-inch curb. We have a sidewalk. It is illegal to walk on the expressways of Michigan, yet we still see these sidewalks.

Notice the impact damage to the end of this bridge rail. Notice that the guardrail ends there instead of being wrapped around.



One early morning a fellow did come along there, he got snagged at the very end of it and ripped his car apart and he was killed. It could have been prevented had this bridge rail and guardrail system been adequately designed for the vehicle to slide along it.