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BPR Director Reports

Current Highway Problems

Remarks by Francis C. Turner, Director of Public Roads, Federal Highway Administration, U.S. Department of Transportation, prepared for delivery at a "Highway Industry Day Conference" sponsored by the Indiana Highway Constructors, Inc., Indianapolis, June 30, 1967.

. . . most of my public appearances during the past year or so have been at meetings of highway engineers and administrators representing the governmental side of the highway program. While some of these are here, the attendance is largely made up of people from the private sector—you who actually build the roads or supply the necessary equipment and materials to build them. So I feel a little closer to the dust and noise of highway construction at this meeting than at some of those which are more concerned with the planning and the other essential pre-construction steps.

I chose my own topic for these few remarks. It is "Current Highway Problems"—and I suppose I could just say "money" and let you adjourn this luncheon session. To be sure, money is a current problem, as it has been a past problem, and no doubt will be a future problem. Since the campaign of the twenties to get us out of the mud, there has never been a time when funds were available in sufficient amounts and at all levels of government to meet the transportation needs of a constantly expanding and shifting population.

In most cases this has not been due to penny-pinching on the part of government or of the people who comprise it, but to the chronic failure of revenue resources to keep pace with the proliferation of human needs. The United States is more dependent on highways for transportation than most other countries, but it was not until 1956 that a realistic step was taken at the Federal level toward the assurance of adequate and predictable highway financing. This step, of course, was the establishment by Congress of the Highway Trust Fund, which finances the Federal share of the Interstate and other Federal-aid highway programs from taxes paid by road users.

It is no secret that the revenues flowing into the Trust Fund are not sufficient to complete the Interstate System in 1972 as originally planned while maintaining the other Federal-aid programs at the present $1 billion annual level. This situation, however, is no fault of the Trust Fund nor the result of any bad guessing as to the revenues that would go into it. As a matter of fact, actual receipts have run just about neck-and-neck with our estimates from the very beginning.

Construction costs have gone up, certainly, just as have the costs of a loaf of bread, a new car, a haircut, a movie, or any of the other necessities or luxuries of modern living. But the basic reason for the present inadequacy of the Trust Fund lies not so much in increased costs but in changing concepts of the kind of highways we should be building. I know that you are especially interested in the financing problem and the outlook for the future and I intend to touch on these matters. But I want to talk to you for a few minutes about some other current highway problems—especially two major ones—that are increasing national concern; and in doing so I want to address you as citizens first and roadbuilders second.

The gravest current highway problem is the problem of highway safety and the greatest challenge we collectively face is to do everything humanly possible to solve it. The statistics are grim enough. Last year highway accidents injured 10,000 people *every day*, killed 1,000 *every week* and cost well over $800 million in senseless economic waste *every month*. But figures don't tell the story of wrecked careers and broken families, or measure the depth of human misery resulting from motor vehicle accidents. In some cases, ironically, the survivors are possibly the real losers.

The records show that highway travel today is much safer than it used to be in terms of miles of travel. In 1934, for instance, the fatality rate per 100 million vehicle miles was 16.7. Last year the rate was 5.7. In other words, had the 1934 rate continued, we would have had more than 150,000 fatalities in 1966 instead of the 52,500 we actually had.

This is little or no consolation; *one* traffic death is too many. But the comparison does indicate that the persistent efforts over the years to improve the transportation *system* is paying off many thousand fold. By system, I mean the driver, the vehicle and the environment; and by the environment I mean the road and everything on and alongside it, plus the weather.

The fact that we have made progress is reason enough to redouble our efforts to make the vehicle, the driver and the road they travel as foolproof as possible. Unfortunately, the causes of accidents don't fall into neat little compartments. Sometimes the vehicle is at fault, sometimes the highway, sometimes the driver, often a combination of two or more of these. I read recently about an accident that occurred before the vehicle left the garage. The driver (a man, not a woman) absent-mindedly shifted into drive instead of reverse and made an unplanned exit through the rear wall. Luckily, there were no injuries except to the garage and to the driver's self-confidence.

I don't mean to make light of a most serious subject, but the accident in the garage proves a point, if any further proof is needed. That is that human character is amply endowed with frailties and that we must continue to reckon with these since human nature so far has resisted all attempts to reform it or legislate it into new directions. It follows that the designers and the builders of both motor vehicles and highways must compensate to the extent physically possible for the weaknesses of human beings.

With the formation of the new Department of Transportation, most of the motor vehicle safety efforts at the Federal level have been assigned to the National Highway Safety Bureau in the Federal Highway Administration. This is not true, however, of the role of the highway itself—and its appurtenances—in the annual traffic accident and death toll. The safety of the roadway and the roadside remains a principal responsibility of the State highway departments and the Bureau of Public Roads and, as you know, this whole question is currently under study by the Blatnik subcommittee on the Federal-aid highway program.

Quite naturally, the hearings have generated a great deal of publicity, and some of the news reports would indicate that highway designers and builders haven't learned a thing about safety in more than a half-century. So I would like to review briefly some of the things that have been done and are being done by the State highway departments and the Bureau of Public Roads to enhance the safety of the Federal-aid systems.

Obviously there is no such thing as a perfectly safe driver, a perfectly safe vehicle, or a perfectly safe highway. Just as obviously, there is a kind of law of diminishing returns in trying to achieve perfection in any of these three elements. A driver will take just so much training and education. A perfectly safe automobile would be one that either didn't move or would encase and insulate the driver so securely and expensively that he wouldn't or couldn't buy it—or be able to move it around after he had bought it. Likewise, any approach to a perfectly safe highway would involve expenditures of money and appropriations of land that would be utterly prohibitive. We have to assume, then, that there is perhaps an irreducible minimum of traffic accidents and deaths, but we must proceed with all the means at our command to dip down to that bare irreducible minimum.

We now have about 24,000 miles of the Interstate System in use—more than 58 percent—and the traffic fatality rate on the open sections is less than one-third of that on the older, conventional highways. Our experience to date proves that the built-in safety features of the Interstate System, derived from decades of research, experience and observation, will save about 8,000 lives a year when the entire System is completed.

On the other hand, while the Interstate System will carry nearly one-fourth of the total traffic, how about the other three-fourths? As to new highways on the Federal-aid systems, the approach of course is to incorporate as many of the Interstate-type design features as possible within the limitations of available funds. On the older highways, we are getting good results with the so-called Spot Improvement Program, and the potential

The ABC program would be rural primary, rural secondary, and urban, including a new thoroughfare or arterial system in metropolitan centers.

The present urban portion of the ABC program consists of extensions of primary and secondary routes into urban areas.

The State highway departments endorse the continuation of the present 20-percent transfer provision between the ABC program allotments so that the program can be tailored to meet the most pressing needs of the individual States.

They also approve of the sliding scale provision for the public land States. While the departments do not approve of identical matching ratios for all systems, particularly if the interstate were to be included, the consensus was close enough for the ABC networks that they can have the same matching ratio and could discourage attempts to place a road in the wrong system just to gain a more favorable matching ratio for a project.

The highway departments have expressed their disapproval of propositions for using highway trust funds to construct parking lots or garages, but they fully realize such terminal facilities must be an integral part in overall motor vehicle transportation. In view of the inadequacy of funds in sight to even cope with the most pressing road and street needs, parking facilities should be self-financing.

Just a word about the total needs, as reflected by the studies of the individual States. We have not predicated our proposed program on these total needs, but have used the component parts of the total needs to determine the percentage of available funds that should be applied to the various systems and categories. As a result, we have developed the following tabulations:

Tabulation and Summary

System Category	Approximate Percent of Total Needs	Matching Ratio, Federal-State	Funds (in Billions) 1975-85		
			Available Federal	Required State	Available State
Interstate	10	90-10	$7.04	$0.70	$0.53
Urban	30	2/3-1/3	15.65	7.83	5.83
Rural primary	40	2/3-1/3	20.87	10.43	7.77
Rural secondary	20	2/3-1/3	10.44	5.22	3.87
Total			$54.00	$24.18	$18.00
Total 10-year program (in billions of dollars)			78		

Comparison of Present Funds (1968 Fiscal Year) and an Average Year in the Proposed 10-Year Program

(Dollar Amounts in Billions)

Category	1968 Fiscal Year Federal-Aid Program			Average Year for 1975-85 Period			Equivalent 1966 Dollar	Comparison with 1968 Program
	Federal	State	Total	Federal	State	Total		
Interstate	$3.40	$0.34	$3.74	$0.70	$0.07	$0.77	$0.56	1/7th
Urban	.25	.25	.50	1.56	.78	2.34	1.70	3.4 times
Rural primary	.45	.45	.90	2.09	1.05	3.14	2.27	2.5 times
Rural secondary	.30	.30	.60	1.04	.52	1.56	1.12	1.9 times

The total 1975 to 1985 needs for the State highway systems is $129.69 billion (1966 prices) which would total $179 billion for the 1975 to 1985 period, based on presently indicated 2½ percent per year cost increases.

The total for all road and street needs is $209.59 billion (1966 prices) and this would raise to $285 billion for the future decade.

However, should for any reason it be decided that the highway program be expanded, the justification for such expansion is well established and justified and the highway program could be increased and would not require the establishment of a new agency to handle it. The State highway departments and the highway industry have the capacity to get the work underway in a minimum of time.

We have the expandable capabilities. It is easy to step up a program in progress, but turning a program off or below a minimum optimum operating level that involves major functions of an organization must be avoided. The State highway departments would lose highly skilled specialists that could not be replaced without a long period of training.

We direct your attention to the increasing requirements and reviews, some statutory and some by Executive order, that complicate getting a project ready for construction.

Most of these requirements have some meritorious reason, but they are getting so numerous and complex that they are reaching a saturation point.

We suggest that the committee might wish to make an analysis of them and that the State highway commissions and commissioners be allowed to accept more of their public responsibilities in some of these problem areas.

Some of these additional requirements and review procedures actually come as surprises.

We agree that programs, especially in urban areas, must be coordinated and it is for that reason that we encouraged and sponsored the enactment of the 1962 urban transportation planning requirement. We feel this planning requirement is good and that it will take care of most urban problems.

If the threat of penalties continue and more complications are introduced, it might cause a reappraisal of the desirability of Federal aid in our highway programs, especially in some of our larger States.

We sincerely appreciate the opportunity and privilege of presenting this material, and we solicit your criticisms, advice, and counsel as we work further on our assignment.

This presentation is a preliminary one and will undoubtedly undergo considerable refinement and some change, however, the basic needs and outline of the program are probably in close agreement with the final recommended program to be submitted in 1969, since the needs are authentic and well documented.

A copy of each State's needs brochure, a copy of the basic questionnaire showing the voting, a summary of replies and consensus, and the summary outline for a continuing Federal-aid program, based on present information and thinking, has been furnished to your committee. Only one State did not furnish a needs brochure or complete a questionnaire form.

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bus lanes, reverse direction lanes, unbalanced lanes, and improved truck and bus loading stations.

What we are striving for in this program, of course, is greater utilization of existing highways, thus providing a great deal of additional traffic service at minimum cost. Obviously, it is no substitute for the needed new freeways and other urban arterials that must continue to be built to catch up with and then keep pace with the expanding urbanization of the country.

Another promising program lies in what we call the joint development concept, which is designed to make the maximum use of both space and funds in locating and building urban freeways. In simplest terms, it involves the use of the freeway to serve the social and economic ends of the community as well as its transportation needs. The key lies in the acquisition of entire blocks or squares of property rather than the minimum required for the freeway right-of-way. In many cases this can be done at little or no extra cost and certainly is much cheaper than buying the same land piecemeal for housing, recreation centers, parks and other community needs. Of the total property acquired by the local authority, the highway department would buy what amounts to an easement for the right-of-way or "air tunnel." The rest of the property over, under and adjacent to the freeway could be used for any of a number of community purposes.

This is an enlightened concept, permitting the construction of replacement housing while building the freeway, with a minimum of displacement of the dwellers in that area. It makes the most efficient use of both money and space to provide the freeway and the other needed facilities as a package development.

This program is still mainly a concept, enthusiastically hailed by planners, but too new to have demonstrated its full potential in actual practice. I personally believe that the potential is great and that the highway people must teach and encourage its development. Today the Federal-aid highway program must be concerned with the total impact of highways on people—on their environment, housing, recreation, cultural interests, and all the other elements of modern living. It must be accommodated to the wider interests made possible by increasing affluence and more leisure time.

The traveling public has indicated quite strongly, for example, that it is interested in esthetics, as well as safety and a smooth ride, on the highways it is paying for. Legislation is now pending in Congress to finance both the beautification and safety programs out of a new special trust fund, with revenues earmarked for these specific purposes. The proposal would authorize appropriation of $160 million for fiscal year 1968 and $220 million for fiscal 1969. By far the bulk of both years' appropriations would be for landscaping and scenic enhancement which form the core of the beautification program.

That brings me back to about where I started—with a promise to cover the financing problem and the outlook for the future. We have faced and weathered financial difficulties this past year. Fortunately, the outlook is now greatly improved.

We entered the new fiscal year with the expectation of about a $4 billion program nationally, in terms of Federal funds. In November it became necessary to reduce this total program to a $3.3 billion level, as an aid in curbing inflationary pressures. When the critical situation was thought to have eased, the restriction was lifted to the extent that Federal-aid highway fund obligations this fiscal year will total about $3.8 billion, or nearly up to the $4 billion level originally projected.

The outlook for the next fiscal year is very encouraging, barring a return of the inflationary pressures that were so prevalent during the early part of this year. It is expected that Federal-aid highway funds totaling $4.4 billion will be released for obligation during the year, together with the additional release of the remaining half of the frozen balances carried forward on June 30, 1966. Additional funds may be released for obligation during the year if the economic situation warrants.

Funds authorized for the fiscal year 1969 in the amount of $3.8 billion for the Interstate System and $1 billion for the ABC program are expected to be apportioned by the Secretary of Transportation late this summer or early fall.

In brief, the program outlook for the next fiscal year is good. A word of precaution is in order, nevertheless. None of us likes to contemplate program cutbacks such as we had this year, but such future action cannot be ruled out if inflationary pressures due to war efforts again become acute. We all trust that it won't happen again.

Now as to the long range. I mentioned earlier that revenues accruing to the Highway Trust Fund will not be enough under existing legislation to complete the entire 41,000 mile Interstate System within the original time schedule. This is because the present highway use tax structure was based on a $46.8 billion estimate of the cost of completing the System. This is inadequate and the Bureau will be presenting to Congress next January a revised and more realistic estimate based on changed conditions and revised concepts of the functions of the System. It will then be a decision by Congress whether to provide additional financing to complete the System on time, to stretch out the program as long as necessary to complete the 41,000 miles, to build as much as possible with available financing, or to adopt some combination of these alternatives.

Your guess as to the action of Congress is probably as good as mine at this point. The only thing I'm sure of is that we must design, locate and build the remainder of the System with intensified concentration on safety, esthetics and other human values, as well as utility and efficiency. If a choice had to be made, it would be better to sacrifice some small amount of mileage, I believe, than to build any remaining section without the fullest consideration to these human values.

As to the longer range, we also will be submitting the initial report on the future highway needs of the Nation. Similar reports will be made every two years so that the needs may be regularly reassessed and updated in the light of changing demands and conditions.

Here again it is hazardous to rush in with forecasts. But without trying to predict the findings of the highway needs study, I foresee a continuing high level of construction activity as far ahead into the future as we can reasonably look. I believe it will include many more miles of urban freeways, serving many purposes, and closely integrated with other transportation modes. I believe that public demand will compel a continuing program on something like the scale of the present one. But the public has indicated quite strongly that it is no longer satisfied with just getting from here to there. People want not only more highways, but safer, more useful and more pleasing highways, and one of the great challenges of these times and of the future is to accommodate our roadbuilding efforts to this desire.

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for the future is promising. This program was undertaken in the spring of 1964 and it is designed to rid the Federal-aid systems of high hazard accident locations by 1969. The State highway departments are being encouraged to program a substantial portion of ABC (primary-secondary-urban) funds to Federal-aid projects aimed specifically at eliminating accident-inducing features and locations. This kind of approach to the problem is really the only practical avenue that is available to us within our limits of money and time.

The response of the States, while not uniform, has been generally encouraging. As of April 30, the State highway departments had programed a total of 2,561 highway safety improvement projects. Of these, 118 have now been completed, some of them for enough time to permit judgments as to the value of the effort. As more examples become available, the Bureau intends to prepare a detailed assessment of the Spot Improvement Program, but I might cite one example from memory. In Iowa, four bridges were widened and improved under the program. In the three years prior to the improvements, there were 17 accidents on the bridges, injuring seven persons. In the first full year following reconstruction, no accidents of any kind were reported. We expect to have many similar examples in the coming months.

I am convinced that the efforts directed toward building safer roadways and shoulders, and at the same time eliminating many of the boobytraps from the older highways, will pay a thousand-fold in the prevention of accidents and the saving of life and limb. But this is not enough. Historically, most safety efforts have been based on the premise that the motorist was going to stay on the pavement, or at least on the shoulder. Now in recent years, particularly on high-speed highways, there seems to be occurring an alarming increase in accidents involving vehicles running off the pavement and then hitting a roadside obstruction.

These are the deadly, one-car, "ran off the road" accidents that we read about with disturbing frequency these days. Both the Bureau of Public Roads and the State highway departments have become increasingly concerned with this problem and, as partial evidence of that concern, I refer you to the so-called "yellow book." This is the result of a joint endeavor by the American Association of State Highway Officials and the Bureau and is officially titled "Highway Design and Operational Practices Related to Highway Safety." It is the result of an exhaustive study undertaken by the AASHO Special Traffic Safety Committee early in 1966 and it deals extensively with the need for eliminating roadside hazards or otherwise minimizing the dangers they present.

This study and report confirms a policy established by the Bureau last year. It requires that all aspects of location, design, traffic control, drainage features and roadside appurtenances are to be examined during all phases of the development of the plans, specifications, and estimates for highway projects beginning with the location survey, and to the maximum extent possible in the construction and post construction stages, to insure that hazards arising from vehicles leaving the roadway out of control will receive primary consideration.

We are calling for the elimination of all unnecessary sign supports, light standards, drainage structure obstructions and other appurtenances from proposed plans. Where the need for such features does not permit elimination, they are to be located in unexposed positions. Much of this type of work would not be of interest to contractors and can be more readily performed by State maintenance forces. In cases of necessary roadside appurtenances, adequate protection for the out-of-control vehicle is to be provided in the form of guardrail, special grading of the surrounding area, impact-absorbing devices or other means.

I have heard about the concern among some contractors that the Federal-aid highway program will come to a virtual halt because of the new safety measures set forth in the AASHO yellow book and in the Bureau's adoption of its recommendations. This is not true. Actually the contract letting will not be diminished, and where there is some necessary delay, it will be negligible and certainly it is for the best possible reason.

These are some of the steps undertaken by the Bureau and the State highway departments to make highway travel safer. In addition, the continuing program of highway safety research is currently being expanded under contracts with private organizations, the State highway departments and universities, to undertake research projects in 30 different elements of the safety campaign.

I have devoted a lot of time to this one subject of safety because, as I said earlier, it is our most challenging problem—not just because the performance of the Federal-State partnership in this field is under Congressional scrutiny, but because we have a high priority moral obligation to use all of the expertise we have gained and are gaining to protect the life, limb and property of the people. And by "we," I mean not only the Federal Highway Administration, and the State highway departments, but the many components of the highway industry.

The other major problem is actually a group of related problems brought about by the ever-increasing urbanization of our country. In 1940, 57 percent of the population lived in urban areas; by 1950, 60 percent; and by 1960, 63 percent. And by 1990 it is forecast that 219 million people will be living in the cities and their satellite communities—more people in urban areas than we have in all 50 States today. The problem is brought into sharper focus by the fact that even now nearly half of all motor vehicle travel occurs on city streets which account for only 13 percent of the total mileage.

In this connection I want to mention two current programs that the Bureau has developed and is encouraging. One is the so-called TOPICS program, which is an acronym for "Traffic Operations Program to Increase Capacity and Safety." This has the twin purpose of relieving traffic congestion and enhancing highway safety in cities. The relatively new policy involves an expansion of the Federal-aid primary system to permit the selection of principal streets and downtown grids, in areas of 5,000 or more population, to receive Federal-aid for certain kinds of engineering improvements. These do not involve major construction work but improvements of traffic operations which can step up speeds on urban traffic arteries as much as 25 percent as a result of a relatively modest investment. TOPICS may involve such improvements as channelized intersections, added approach lanes to signalized intersections, left turn slots, pedestrian and highway grade separations, control systems tied directly to traffic conditions, separate

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