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### FORWARD WITH TOPICS

Remarks by Francis C. Turner, Federal Highway Administrator, U.S. Department of Transportation, prepared for delivery at the 23d Annual Ohio Highway Engineering Conference, Ohio State University, Columbus, Ohio, April 1, 1969.

I have taken a slight liberty with the subject assigned me today. You will notice on the printed program that I was asked to talk about "Forward Again" and in fact that is what I propose to do although I want to narrow the focus a little and talk about our TOPICS Program. The implementation of this relatively new program is proceeding at an encouraging rate and its future implications are enormous.

TOPICS is an acronym for Traffic Operations Program to Increase Capacity and Safety. It is closely related to, in fact made necessary by, the growing urbanization of the Nation and the problems brought about or increased by this urbanization. We believe that TOPICS offers an intelligent and imaginative approach to easing at least two of these problems: the relief of urban traffic congestion, and the reduction of deaths and injuries resulting from traffic crashes in urban areas.

You can see the effects of crowding all of our population increase in the past 20 years into the cities and suburbs, and the transfer of rural lands into suburban sprawl

and industrial centers. You know at first hand what it means in terms of increasing traffic congestion when I remind you that urban travel, in vehicle miles, is now increasing about twice as fast as the urban population explosion; that is, it is doubling every 20 to 25 years.

Urban congestion can be measured in several ways. It can be defined as "delay" - excessive stopped time or slow operating speed. Congestion may also be expressed as an inverse measure of the quality or level of service provided by an urban system as taken from the Highway Capacity Manual. We have not devised a means of quantitatively measuring increases in urban congestion, on a network basis, but all of us -- highway officials and general public alike -- are becoming increasingly familiar with the traffic jams, delays, and other frustrations of city driving which will continue to grow 5 percent worse each year unless we provide some kind of relief.

Another element of the quality of urban traffic flow, that of traffic crashes, is easier although more gruesome to measure. Urban traffic deaths hit a low point during the last 30 years in 1955, when 9,390 people were killed in urban traffic accidents for a fatality rate of approximately 3.5 per

100 million vehicle miles of travel. In 1967, the urban death rate was about the same -- 3.52 deaths per 100 million vehicle miles of travel. But despite this rate stabilization traffic volume increases raised the number of fatalities in urban traffic crashes to 16,700 in 1967, which represents an increase of about 78 percent over the 1955 figure.

It is apparent that if we are going to keep pace with the increasing demands for urban mobility and cut down on this tragic death toll, we will need not only new urban streets and highways, but the fullest utilization of the highway plant we now have and are developing. Since we cannot expect to meet the growing needs solely by more new facilities, because we don't have the funds we must develop another relief measure. That is what TOPICS is -- making better use of what we have.

There are also other social and economic reasons for this effort toward fuller utilization of our urban highways. Out in the country a road can usually be widened or a new one provided with a minimum of dislocation. But in the metropolitan areas the widening of a street or the construction of a new arterial route requires the taking of homes, businesses, or sometimes public lands and buildings serving the community. It is urgent, therefore, that improvements

to urban transportation be accomplished to the extent possible by means that will not require immediate extensive construction and large takings of additional land, because we have neither ample supplies of dollars nor land to permit any other early solution to the growing needs for highway transportation in urban areas. Moreover, as you are well aware, some of our most difficult and increasing public relations problems are created by the need to build new or enlarged highway facilities in urban areas.

In view of these various problems the Bureau of Public Roads formally initiated the TOPICS Program in February 1967. It represents a major step forward in terms of Federal interest in and assistance to urban transportation problems by making possible the more efficient use of existing roads and streets. While fairly simple in concept, it actually amounts to a tremendous advance in traditional Federal-aid procedures.

From our viewpoint TOPICS is a logical outgrowth of an effort initiated by the Bureau early in 1959 in the so-called Wisconsin Avenue studies made in Washington, D.C., with Federal-aid. This pilot program illustrated the feasibility

of increasing the capacity of existing urban arterials without requiring major construction, by the intelligent improvement of traffic operations combined with minor spot construction as required. As a result the Bureau formalized this type of program in February 1967, and now that TOPICS is substantially funded as a result of passage of the Federal-aid Highway Act of 1968 we look forward to a full scale program of this nature.

The Federal-aid Highway Act of 1968 authorized \$200 million for TOPICS during each of the fiscal years 1970 and 1971. These funds were made available for programming during January, as soon as policy decisions on TOPICS were available. We are ready for full implementation of what we have been accomplishing on a piecemeal and rather elementary basis.

At this time, 26 cities in 20 States have formally engaged in TOPICS under its early status as a pilot program. Of the 26 cities involved, studies are essentially complete in 12.

The value of this program is shown very dramatically by a completed TOPICS project in Dover, New Hampshire. It used to take 15 minutes to drive through a heavily travelled

six-tenths-of-a-mile bottleneck in the city. Now, due to TOPICS improvements, it takes four minutes. A number of traffic-operational type improvements were applied to increase the flow with all improvements contained within the existing right-of-way. These improvements consisted of channelization of two key intersections, addition of traffic signals at one intersection, providing curb and gutter for driveway control, widening the bottleneck area from two to four lanes, and painting pavement markings. The work took five months. A second phase of the TOPICS Program, consisting primarily of channelization of major intersections, will be undertaken in Dover in coming months.

It may be interesting also to note the types of improvements that have been recommended thus far. In the smaller cities, the programs usually involve relatively simple spot improvements of signalization and channelization, with general need for upgrading signing and pavement markings to meet accepted standards. Normally the need is not due to capacity restrictions but to create a more orderly flow of traffic through channelization or lane striping, and to improve safety at high-hazard locations. As city size increases, the types of improvements obviously become more

complex and the need for a systems approach becomes even more evident. We begin talking about signalization systems, from relatively simple interconnections of fixed time signalization equipment, up to a complete network of signals controlled by a digital computer in response to traffic conditions data obtained from a network of sensors at key locations. Since capacity is a problem in the larger cities, we find more need for physical construction in order to form a workable one-way pair, provide needed turning lanes, or eliminate street jogs and discontinuities. Safety is a big factor in these cities also, and accident data form the basis for many improvements.

Thus far, from data compiled from 8 cities with an aggregate population of over 1,300,000, we have reports documenting a need for almost \$19 million in these types of improvements. These figures break down into about 27 percent for signalization, 2 percent for signs and markings, and 71 percent for items such as channelization, lighting and other construction items.

The summary brings us up to the present time. Now that special TOPICS funds are available, what do we see in the future insofar as implementation is concerned? Recently, we have begun a series of visits with representatives of the

FHWA-BPR regional and division offices and members of the State highway departments. During these visits we have attempted to clarify possible misunderstandings of the procedural instructions which we have issued, to determine possible problem areas in administering the program, and to find out each individual State's plans for implementing TOPICS. Although these visits are not yet completed we have received some rather consistent information from the visits, particularly on possibilities of implementation.

Despite legal restrictions which hinder the program in many States we feel reasonably certain that most States will have at least one TOPICS study underway by the end of this fiscal year. In many cities, data available from the transportation planning process and other studies in that city will form the basis for implementation of projects concurrently with the TOPICS study. This is allowable so long as these projects are obviously of high priority and of such nature that we can reasonably expect the improvement would be needed regardless of what other improvements would be found necessary. Therefore, although the first year of TOPICS necessarily will be spent in making needed studies, we expect that over half



the States will undertake some implementation of TOPICS projects before the end of this calendar year. Very few States indicate any problem in using available TOPICS funds before they lapse on July 1, 1972.

Our brief experience in TOPICS projects to date does not provide any very solid basis for forecasting the types of projects which will be undertaken. We feel sure that they will encompass the entire range of allowable traffic operational improvements -- such things as intersection channelization, traffic control and lighting installations, judicious street widening at bottlenecks and intersection approaches, and a variety of other engineering techniques. These and other efforts undertaken in cooperation with the local police -- such as parking restrictions and major revisions in traffic handling -- can be expected to produce an increase in the capacity of a city street system by 10 to 15 percent, with a concurrent decrease in accidents. Our Office of Planning did make an estimate of the mix of various types of improvements that we can expect, and this will be the basis of our forecasts until better data are developed from ongoing TOPICS studies. The costs for each type of improvement reflect the

needs which were indicated in an inventory of 782 cities made by the National Safety Council in 1964. Based on present-day prices, it is estimated that \$5 billion would be required to meet the expected needs by 1985 for all urban places of over 5,000 population. This amounts to approximately \$28 per capita spread over a 17-year period.

Channelization work would take a fifth of these costs; lighting, 12 percent; signalization, 8 percent; signs and markings, 3 percent. The relatively few projects to provide for street continuity, railroad crossing improvements, and grade separations would take 12 percent, 20 percent and 26 percent respectively. We believe that signalization will eventually account for greater than 8 percent of the cost because of recent developments in providing more complex, and expensive signalization systems and programs which will make these systems more responsive to traffic needs.

Certainly, our experience to date shows that signalization will make up a larger percentage than expected. Even so, it is obvious that the much more numerous projects commonly associated with traffic operational improvements are overshadowed by the relatively few, but expensive, projects that approach major construction.

We also expect that the metropolitan areas, those with populations of over 50,000, will require 70 percent of the total TOPICS expenditure, with 30 percent remaining for the urban places of lesser population. This accounts for our decision to encourage the States to give first priority for TOPICS to the larger urban areas, where the bulk of our needs are found. This does not mean any lack of concern with the problems of smaller urban areas; it is merely a question of allocating priorities to obtain the most effective results.

Now that TOPICS is reasonably financed for a couple of years and we have some slight indication of its potential, you may ask what are the implications of this program, particularly in light of traditional Federal-State relationships?

First of all, I believe it is part of the continuing evidence of joint interest of both State and Federal governments in the traffic problems of urban areas. When we began our historic partnership less than one-half of the population lived in urban areas. We were rurally oriented and our highway problems were rural. Today twice as many people live in the urban areas as in the rural areas and this ratio will increase

to about 4 to 1 by 1985. Almost all of this growth will be concentrated in the suburban portion of our metropolitan areas. It follows then that these must be our areas of concentrated attention in the years ahead, and that the traffic problems of our urban areas will constitute our greatest work challenge. However, I do not in anyway visualize that our present Federal-State partnership method of operation will become disrupted, nor that Public Roads will begin to deal with individual cities instead of with the State highway departments. There are several arguments against this eventuality. They are:

1. Present Federal law directs us to administer our programs through the State highway departments. The system has worked very well for 53 years, as any unbiased person will attest.

2. Even without the law and the partnership tradition, Public Roads has no desire to deal with the thousands of local units of government nor is it staffed to do so. We rely heavily on the administrative, professional and technical capabilities of the State highway departments.

3. The State highway departments are more directly responsive to the local populace. You are much better qualified to make the administrative decisions necessary to allocate funds intelligently within a State.

4. Most importantly, such a direct relationship would undermine the status of the State government in a period when the need for stronger government at this level is widely recognized.

Therefore, rather than weakening our present relationship, I believe that TOPICS will strengthen it, and also expand our areas of cooperation with local agencies.

As our interest in urban areas continues to expand we will increasingly look towards the systems approach, so that an improvement at one location will actually reduce the severity of the problem, rather than merely shifting the focus. This means that we shall have to consider the entire arterial network rather than the 50 to 60 percent of the network we have normally considered to be eligible for State and/or Federal attention. TOPICS is the first improvement program to take this view.

I mentioned earlier that TOPICS is our first physical improvement program based on a truly systematic approach. Since July 1, 1965, of course, all projects in areas of more than 50,000 population have had to be based on a continuing, comprehensive transportation planning process. TOPICS

projects must also meet this requirement; in fact Congress mandated this for any TOPICS project regardless of city size. Thus we can view TOPICS as a program that depends on the use of planning data often in finer detail than has been necessary for other projects. In fact, much of the basic inventory data of the physical street plant, extent of usage and quality of usage of that plant, should be available from the planning process. In the largest cities, planning data may not have been gathered to the fine detail required, or, if gathered it may not have been used. A TOPICS Program will guarantee that data once gathered for planning purposes will also be used on implementing that planning and in determining operational types of projects.

We believe that TOPICS will also aid in obtaining needed coordination with mass transportation facilities. The urban transportation planning studies provided an opportunity for effective coordination between public transportation and street and highway planning. But TOPICS improvements on streets and highways will affect the efficiency of the chief form of public transportation existing in most cities; namely, bus transportation. For this reason highway agencies exert a greater influence over mass transportation than is generally

realized. By providing for expeditious traffic movement on streets and highways, bus transit is made more attractive and more efficient. For example, an official of the Cleveland Transit System has estimated that every increase of one mile per hour in the average travel speed on that city's street system would produce an annual savings in transit operating costs of about \$1 million. Thus improvements in the efficiency of the street and highway system benefit bus transit as well as private cars and trucks. More attention and imaginative effort need to be given to this means of improving street utilization in the future.

One final note on the implications of TOPICS. This one is more indirect but it is readily apparent. One of the requirements for TOPICS projects is that the city involved must provide some method of assuring traffic engineering competency to maintain and operate these improvements. The need for added manpower trained in the techniques of traffic engineering is clear and unquestioned. This manpower is presently in short supply. Therefore, there will have to be some means of providing needed training for both professionals and technicians. This is not an area in which the Federal Government has any direct responsibility, but I am sure that the States will find it more and more necessary either to

provide direct help to the smaller urban areas or to provide some training for employees of these areas. At the very least, there will be a need for greater cooperation between State and local authorities in the use of a very scarce commodity, trained manpower.

In summary, I believe TOPICS is another giant step forward in the evolution of the Federal-aid highway program as administered jointly by the Bureau of Public Roads and the State highway departments. It is something of an innovation and thus a challenge to the capability of the State-Federal partnership to adapt to new conditions. This capability has been tested many times during the past 53 years and I have every confidence that the results in this instance will be the same as in the past -- a clear showing that the partnership is not only efficient, but is flexible and adaptable to the changing conditions of our society.

TOPICS is not intended to be, nor can it reasonably be expected to be a substitute for needed reconstruction and enlargement of many portions of our urban street network. There are some advocates who think that since TOPICS is now here, we can eliminate all the rest of the Federal-aid program and thus find ourselves a bargain-priced solution to urban



traffic needs. Such people are just not realists. We must continue in both directions to meet the rapidly growing needs of our times.