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FEDERAL HIGHWAY PROGRAM AND PROCEDURES

By FRANK C. TURNER

I EXPECT THAT MANY PEOPLE are under the impression that the Federal-Aid Highway Act of 1956 is something entirely new in legislation and that it marks a new venture by the Federal Government. But such is decidedly not the case. It might surprise you to learn that the 1956 Act is the 29th amendment of an act originally passed on July 11, 1916, nearly 41 years ago!

The legislative title of the 1956 Act states that it is "an Act to amend and supplement the Federal-Aid Road Act of 1916."

Although that original act has been many times amended and supplemented, the same fundamental principles of that basic legislation are still very much in force and still constitute the foundation on which all the subsequent revisions have been made — including even this latest 1956 Act. True, there have been important additions as the years have passed—just as there were important additions contained in the latest act passed last year—but it is a remarkable tribute to those legislative architects of four decades ago that the basic principles originally embodied in the 1916 Act have never been found to be out of date.

Time has brought improvements, changes, additions, and deletions in the procedures which we have utilized over the years to keep pace with the growth of highway development. But the basic foundations which were laid down 41 years ago stand out more prominently today than ever before. They truly have stood the test of time and their worth is fully proven.

Here are some of the bedrock principles for the cooperative Federal-State highway program which has long been an outstanding example of sound Federal-State relations.

Under that program, and still continuing, Federal grants to the States are apportioned according to a formula written into the law which gives weight to the area, population, and rural mail-route mileage in each State in relation to national totals. These Federal grants for highway construction must be matched by the States with their own money. In the continuing program these regular or, as we frequently call them, ABC funds are matched by the State on a 50-50 basis. The States have retained the initiative and prerogative in selecting the roads to be improved and the type of improvement. They are responsible for surveys, plans and specifications, for letting contracts, and for supervision of construction — subject to approval or concurrence by the Bureau of Public Roads. Maintenance of the roads built with Federal-aid is an obligation of the States.

Legislation since 1916 has authorized increasing amounts of money, but the Federal-Aid Road Act of 1916 has remained the fundamental basis for operation of this mutual Federal-State highway program. The cooperative patterns which have developed over the years are in the best tradition of dedicated public service.

The Federal Highway Act of 1921 required the State highway departments, in cooperation with the Bureau of Public Roads, to designate a system of principal interstate and intercounty roads, limited to seven percent of the total mileage of rural roads then existing. The use of Federal funds was restricted to this system. Every route in this network was proposed by a State highway department. The Bureau of Public Roads brought the States together in regional groups to arrange the meeting of routes at State lines and thus assure a coordinated system of primary roads for the entire country.

This far-sighted step was taken when total motor vehicle registrations were fewer than 10.5 million, and when transcontinental travel by automobile was indeed a venturesome and almost unheard of undertaking. Today motorists whose routes crisscross State lines and often span the continent reflect that these smoothly interconnecting State networks did not just happen—behind them lies wise legislation and an immense amount of careful planning and cooperative effort.

Between the two World Wars a vast Federal-aid network of highways was built. Most of these were two-lane roads designed to catch up with existing traffic demands. Few were built with the long-range future in mind.

Under the impact of steadily increasing traffic volumes many sections of this primary system became inadequate—this was especially true of those heavily traveled routes serving large cities and industrial areas. By the end of 1941 nearly 35 million cars, trucks, and buses were on the move, forming an endless stream of traffic over the busier routes. Despite wartime travel restrictions, highway problems multiplied.

The Federal-Aid Act of 1944 took three important and much-needed steps. It authorized the first specific funds for Federal-aid in urban areas and it provided for the selection of a Federal-aid secondary system. And most importantly, it called upon the States and the Bureau of Public Roads to designate a National System of Interstate Highways

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connecting the important cities and industrial centers of the country. You can see therefore that this much-discussed system was authorized and laid out 12 years ago rather than in 1956.

I want to underscore the crucial role of highway planning in this period. Planning which recognized both the local, day-to-day service performed by motor vehicles and the ever-increasing need to synchronize longer-haul travel patterns. Two of the Bureau's reports, "Toll Roads and Free Roads" compiled in 1939 and "Interregional Highways" prepared in 1944, led directly to the 1944 authorization for the Interstate System. Both of these reports relied heavily on highway planning data supplied by the States and could not have been produced without that cooperative aid. Here and elsewhere along the path of highway improvement we find recurring examples of the wisdom and sound practicality written into the basic 1916 Act.

The need for a nationwide network of main arteries, built to high standards and serving the entire country, had been accumulating for many years. The traffic demands of World War II heavily underscored this need and also focused attention on the vital role such highways play in defense. And by defense I mean not merely for the movement of men and military goods. These highways served as an integral part of a vast industrial assembly line carrying all of the array of raw materials, goods in process, and finished products that are the symbols of modern industry.

By 1947 the States and the Bureau of Public Roads, in close consultation with the military, had selected most of the routes which were to make up the 40,000-mile Interstate System as originally authorized by the 1944 Act, and the job of selection was completed in 1955.

This planning was basic and essential, but we could not build the needed roads because there was no provision for funds or even the prospect of funds to complete the system in any reasonable period of time. Meanwhile, traffic pressures, traffic accidents, congestion and delay, continued to mount.

Then, in 1954, Congress called for a new inventory of the Nation's highway needs, and President Eisenhower's urgent message to the Governors' Conference in July of that year proclaimed the overwhelming need for a greatly enlarged highway construction program.

The Federal-Aid Highway Act of 1956 does indeed embrace the "Grand Plan" which the President envisaged in his message to the Governors. It also reflects the long and patient efforts of the 84th Congress, highway officials, engineers, and the many individuals and organizations who firmly supported the new program. This far-reaching legislation is likewise a direct by-product of the close and long-sustained relation between the Federal Government and our State highway departments. It is therefore a fitting tribute to 40 years of cooperation, hard work, and good will that the 1956 Act became law on the 40th anniversary of its 1916 predecessor.

But at the same time, and because of its sweeping scope and enormous size, the 1956 Act presents the greatest challenge that State and Federal highway officials have ever faced. To carry this new program forward, to keep it on schedule, and to complete it to the high standard which Congress has set will require all of the vision, energy, integrity, and high purpose that we can muster.

One very important new provision of the 1956 Act is directly tied to the principles which I have stressed. That is, of course, the added emphasis which the bill gives to the highway system concept. The bulk of the funds provided by the Act is for the completion in a 13- to 16-year period of a designated interstate highway system of specified length and general location built to prescribed standards with a fixed amount of funds. This feature of the 1956 Act is new. For the first time we have set out to build a specific highway system of given extent in a given time interval to a given standard, and all authorized at one time in a complete package.

While this is an important new approach long advocated by highway people, it adheres to and is based on the principle that we should relate our construction effort to a well-defined system that interconnects the principal metropolitan areas, cities, and industrial centers, and at the same time serves the national defense. All of the nearly $25 billion authorized by Section 108 of the Act must be put on this system—it cannot be diverted elsewhere.

No matter how we measure it, in miles or money, the figures are hard to grasp. This huge Federal grant, plus another $2.6 billion dollars in required matching funds from the States, will provide for a 13- to 16-year construction program designed to modernize a 40,000-mile network connecting all of the nation's cities of more than 100,000 population and our industrial centers from coast to coast.

Although it comprises only one percent of our total road and street mileage, this key network will carry at least 20 percent of all traffic when completed. In sharp contrast to earlier road standards, only about 15 percent of the Interstate System will be two-lane highways —all in lightly traveled areas—but in all cases the right-of-way and basic design requirements are such that more lanes may be added as required by future increased traffic. The remainder of this vital Interstate System mileage will consist of multi-lane, divided expressways. By contrast with today's costly and dangerous congestion, future urban traffic will flow into and around large cities and industrial centers at expressway speeds. Equally important, these great trunk lines will act as traffic corridors serving the smaller communities, both directly and through interconnecting and feeder routes of the primary and secondary systems. This network also will bring town and country much closer together in time and ease of travel.

Design standards and other features of the Interstate System are in keeping with its principal long-range functions:

1. To interconnect commercial and industrial centers from coast to coast.
2. To serve the multiple needs of highway users in thousands of communities adjacent to these traffic corridors.
3. To provide swifter, safer, more efficient movement of goods and people within large urban areas.

4. To strengthen the nation's defense and add to its survival potential in the event of warfare.

For the first time the 1956 Act legislatively requires engineers to design for specific future traffic loads—the types and volumes of traffic forecast for the system in 1975. Thus we are looking nearly 20 years ahead, when more than 100 million passenger cars, trucks large and small, and buses are anticipated—an increase of more than 50 percent over the 65 million in use today.

We must reckon with close to a trillion vehicle-miles of travel each year against present totals of about 650 billion.

And we must constantly bear in mind one of the important characteristics of this age. I refer to the steady trend toward urbanization which has featured the last several decades of growth of our country. Today there is almost no activity which does not depend in some degree on highway transport. And in countless communities motor vehicles provide the only effective means of transportation to meet the endless and varied needs of individuals, commerce, and industry. There is a close interrelation between our city and industrial development and our highway transport facilities.

Consider, if you will, the wide range of problems posed by the changing patterns of urban, suburban, and rural settlement in the United States. It is a growing, dynamic pattern, unique in history. Chicago is in the very heart of a vast urbanized region or, rather, a series of metropolitan areas spread over 75 miles in length and 10 miles in width, where more than 6½ million people live and work, and closely connected with still other rapidly developing areas to the south, north, and west.

Motor vehicles have made this pattern possible and highway transportation holds the key to future progress. Fulfillment of the new highway program is not a mere matter of design, engineering, and construction. It is a task for all of us, and many others as well. The scope and purpose of this annual Right of Way Seminar is an example of both the opportunities and problems that lie ahead.

The deliberations at this meeting will bring us to the very heart of several problems and opportunities that are basic to our planning for this program. One of the most important features which Congress wrote into the 1956 Act requires control of access on all projects that are approved for the Interstate System.

To some people the phrase access control suggests an unwelcome, arbitrary restriction on the motorist's right to go where he pleases, as he pleases. In reality it means just the opposite, for it actually means much greater freedom for the vast majority of users—that is the basic purpose of all traffic regulations. Controlled access means that every car, bus, or truck entering or leaving these trunk lines will move along special facilities especially designed to channel vehicles in and out of the through traffic streams with safety and efficiency according to carefully planned access and exit schemes. Planned access provides cloverleafs, overpasses, and underpasses, as well as ramps and carefully designed interchanges to insure the swift, efficient and, above all, the safe movement of all vehicles. Without such controls the free, safe, and steady flow of traffic would be impossible.

Random access with its inevitable combinations of frequent intersecting side roads and roadside business fronting on the highway at surprise locations soon turns the average busy thoroughfare into a congested, slow-moving welter of traffic hazards "controlled"—or, more accurately, stopped—by a string of red lights. Such highways, without planned access, grow obsolete long before they wear out—they have been correctly called a tragic and expensive example of controlled confusion. As this condition grows more and more aggravated, traffic dangers are multiplied many times over.

This is abundantly proved by an impressive array of data. For example, let me cite the results of a survey covering more than 2,500 miles of highway—40 percent without access control, 40 percent with partial control, and 40 percent fully controlled. The accident rates per hundred million vehicle miles were 403, 204, and 117, respectively, and the corresponding fatality rates were 3.0, 9.6, and 2.8. These figures are based on more than 14 billion miles of vehicle travel. Some of the newly-built expressways and thruways, built to Interstate System standards, are showing even more favorable results. Some of you may wonder about the higher fatality rate shown for partially controlled highways. Undoubtedly this illustrates the danger of the unexpected—many motorists were not sufficiently alert, and cautious to cope with the sudden surprise of an unexpected vehicle crossing or entry point permitted by the highway design. When building to higher standards where a sense of security encourages greater speeds, we dare not compromise with these occasional hazards—we must provide the continuing added safety factor that fully planned access affords.

Last year traffic accidents claimed 40,000 lives on our roads and streets. This nationwide panorama of sudden death unfolding day to day is one of the most shocking facts of American life. But even that is not the whole story. Last year about 1,350,000 men, women, and children were injured—many were left hopelessly crippled, and more than 100,000 suffered some kind of permanent physical impairment.

Dollarwise, the National Safety Council has set an annual price tag of nearly $5 billion on traffic accidents.

The Automotive Safety Foundation estimates that modernization of the Interstate System will save close to 4,000 lives a year.

As for the cost of congestion and traffic delays, the Automobile Manufacturers Association estimates that when the interstate network is completed highway users will save $550 million a year in vehicle operating costs, $725 million in accident reduction, and $825 million in time losses by commercial vehicles.

The safety factor alone should be decisive in fixing high standards for this new network, but planned access has many other advantages. In positive terms of economic growth and expansion we can point to widespread and often sensational developments that follow in the wake of modern expressways.

Probably because access control is so

closely identified in the average motorist's mind with this feature of toll roads, which is required in order to collect charges at the toll booths, many motorists have raised questions about how they will find service stations, restaurants, overnight sleeping quarters, and other essentials, since the 1956 Act prohibits such establishments within the Interstate System right-of-way, where they would normally be found on a toll road.

These services, already existing or yet to be provided by private enterprise, will be found at or near carefully selected points of access. They will be found also along service or feeder roads, many of them in communities adjacent to the main trunk lines. This problem in itself will require some of our best and most far-sighted planning and close cooperation by State and local highway officials, as well as Bureau of Public Roads engineers. It poses a whole series of problems for the members of this Association.

I should like to go back to a point which I stressed earlier—the growth of the highway system concept. Prior to passage of the Federal-Aid Act of 1944 —which provided for the selection of a Federal-aid secondary system — there were few States having meaningful laws for the effective classification of local roads into transportation systems. For many counties the Federal requirement in connection with the secondary system was their first introduction to the system concept.

Happily, public understanding and acceptance of the system concept has grown year by year. In many instances this developing cooperation has made it possible for the counties to substitute the engineering approach for the so-called horse sense approach in local road building. The pattern has become one of step-by-step State-county cooperation in a professional program carried on by and between professionals.

We are fortunate indeed that this State-county working relation has developed to the present point—now that the new Federal Highway Program is under way. We shall need those close working contacts.

Standards for the Interstate System require planned access and elimination of practically all grade crossings. Now add the fact that this 40,000-mile system will pass through 37 percent of all the counties in the nation; that these counties hold over 50 percent of the population and market nearly 50 percent of all farm products sold; add the further fact that nationwide about 80 percent of all passenger car trips are under 10 miles; and you can see that inevitably these conditions will call for much reorientation of customary local travel routes in those counties. This means that local parallel and intersecting routes leading to interchanges with the great trunk lines will require very careful planning—planning which will provide both short haul service to motorists making trips under 10 miles and off-the-highway service to through motorists in need of food, fuel, or overnight accommodations.

Obviously these situations will present many problems and opportunities centering around the acquisition of right-of-way on both the primary and the secondary Federal-Aid Systems. And these are problems which must be shared with other highway officials, engineers, and the many organizations that have a stake in safer, more efficient highway transport. Properly located and designed these roads and highways can stimulate and strengthen urban, suburban, and rural growth.

The scope and urgency of the Interstate program invite superlatives—it is by far the greatest volume public work ever undertaken by mankind. But you and I know that this key network cannot realize its full potential unless our other road systems are brought up to par.

Congress fully recognized this fact. Witness the increased authorizations for regular Federal-aid in the 1956 Act.

The regular or ABC funds are provided for the improvement of two principal systems — the 235,000-mile Federal-aid primary system, which includes the 40,000-mile Interstate network, and the Federal-aid secondary system, consisting of 520,000 miles. This 755,000-mile total is eligible for improvement with Federal-aid funds.

The 1956 Act provides for about a 60 percent increase in Federal funds for these two systems over and above the average of $530 million made available annually for the first nine years following World War II. Funds in the amount of $825 million have been provided for the regular Federal-aid highways for the present fiscal year; $850 million will be available for 1958, and $875 million for the fiscal year 1959. These increases, coupled with the fact that the appointment of Interstate money will release ABC funds that would otherwise have to be used on the Interstate System, provide for the very substantial improvement to the regular systems in addition to the mammoth Interstate program.

Needless to say, these systems are interdependent. Traffic switches back and forth, from one to the other, endlessly. Each enhances, complements, and serves the other. The same can be said of the 2,645,000 miles of roads and streets that lie outside the range of Federal-aid. If they are neglected the entire country will suffer.

Well, now that the new program is more than 10 months under way, how are we coming? Are we really rolling? Are we on schedule? The record shows that as of May 1, 1957, contracts have been advertised and funds obligated totaling $1.809 billion as Federal-aid on the primary, secondary, and Interstate Systems. On the Interstate System alone, construction contracts aggregating over $590 million in Federal cost have been awarded for 1,123 miles of magnificent new highway—included are contracts for 1,009 bridges. By May 1 of this year 17 States had committed all of their 1957 Interstate funds and were moving ahead on the 1958 monies.

I regard this as an excellent beginning, but it is just that—a beginning. We are laying the groundwork for tomorrow's highway systems, but we are doing much more than that. We are also setting the pattern for tomorrow's way of life in countless communities across this great nation. That is the real measure of our responsibility as public officials, as engineers, — and as American citizens!