

Jordan-Laid

better highways ahead

by frank c. turner

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A native Texan gives an appraisal of 1958 Federal Aid Highway Act and urges broad public understanding to keep road program moving on schedule

THE TEXAS Good Roads Association was among the many groups working on behalf of the vast Federal-State highway program which became a reality in the enactment of the Federal Aid Highway Act of 1956. The work did not reflect a narrow interest. Its ultimate goal, certainly, was for a better and stronger America. Highway transportation is such a vital force in our national economy that a famous quotation may be aptly paraphrased to say, "What is good for roads is good for the country."

Through the efforts and interests of such groups representing rather generally the whole public—we have a big highway program. If sincere, hard work will bring it about, that program certainly will become a reality as fast as available funds will permit.

The Texas Highway Department, under the very capable leadership of Dewitt Greer, is doing an outstanding job. Mr. Greer is not only serving Texas well, but also through his active participation in the work of the American Association of State Highway Officials and other such groups, has helped and is helping to mold policies of national significance in highway affairs.

We, in Washington, operate this Federal-aid highway program by remote control—not as manipulating long strings on a puppet, but through the almost complete delegation of Federal authority and responsibilities to our field offices. If Public Roads is being helpful to Texas in this cooperative enterprise of ours, and I believe we are, much credit certainly is due Clason

Taylor, our Regional Engineer located at Fort Worth, and J. M. Page, our Division Engineer for Texas, located in Austin.

The Texas Good Roads Association was organized in 1932, which doesn't seem very long ago. But the 24 million motor vehicles registered in the United States, then, have now multiplied by two and three-quarters times. In Texas, registrations have jumped during the quarter-century from one million to more than 4 million, and Texas has risen from sixth place among the States to third place, yielding only to California and New York in this item.

Meanwhile, our national total mileage of roads and streets has increased but little—and this is as might be expected, since even 25 years ago practically every village and farm was reached by some kind of road. What also might have been expected during the 25 years, despite World War II and Korea—was the continuing improvement of these roads and streets commensurate with their growing traffic load. But this did not happen in the same degree.

It was not until 1956 that we really decided to come to grips with the mounting traffic problem and adopt a long-range program designed to solve it. The Federal-Aid Highway Act of that year provided a program aimed at completion, in a decade and a half, of a designated Interstate System of predetermined length and built to or above prescribed minimum standards—a system with built-in protection against early obsolescence, and capable of handling as a very minimum the traffic of 20

years from now without congestion, and with built-in provisions for easy expansion to accommodate the increases of still later years. By 1975, this nation is expected to have more than 100 million vehicles, traveling well over a trillion vehicle-miles a year. And if Texas lives up to her reputation, she will then be leading the States in numbers of vehicles.

Let me reiterate that important phrase—a system with built-in protection against obsolescence. In the first place, never before have we undertaken the establishment of a whole highway system, simultaneously all over the nation, in city and country alike, with a specific length and locations, a uniformly high level of design standards, and a long-range completely packaged authorization for its financing.

And never before have we been so conscious of, and laid such careful plans against, obsolescence. One of our soundest measures, certainly, is the acquisition of ample rights-of-way, so that we may not only build the traffic lanes we need now, but will be able to provide for future additions where there may occur such needs. Too, these wide rights-of-way will serve at the same time to provide the broad, variable wide medians that are such important safety factors. Not only do they keep the opposing traffic streams well separated, but they help to keep the drivers interested and alert.

The acquisition of right-of-way is a complicated and often protracted procedure, involving the combined talents of engineers, lawyers, and real estate

experts. Right-of-way for this Interstate System is going to cost about \$5 billion, so obviously we have before us, in the aggregate, a bigger real estate transaction than has ever before been envisioned. This problem is somewhat new to the highway department of Texas, where traditionally the counties and cities have provided such rights-of-way as were needed for state highways. The Texas Highway Department has been organizing its own right-of-way unit and has made very satisfactory progress in doing so.

The single feature in highway planning that, more than any other, will retard obsolescence is what we, as engineers, call planned, controlled access. Everyone has heard many descriptions of what it is, how it works, and why it is needed. Better than any engineering or economic justification in general terms, however, a case history can drive home this point.

In another state, on a heavily-traveled route, a new section of highway was built only 15 years ago, extending from the limits of a large city to an important cross route 7 miles away. The road was laid entirely on new location, across farm land and open country. It was built as a four-lane divided highway, to what some thought was a ridiculously extravagant design, but, and this is important, access was uncontrolled and road crossings were all at grade.

Now, it happens that about one mile of this road lies within a state park; so, in effect, that portion has controlled access. That one mile functions as well now as the year it was built. But on the rest of the route, within 10 years' time, service stations, refreshment stands, businesses, apartments, and residences lined both sides of the road. Traffic lights were installed at major cross roads. Driveways and crossroads now average 250 feet apart.

What does this mean to the driver? Slower overall speed, more stop-and-go, more gasoline burned, more repair bills, greater nervous tension. That average of a road entrance every 250 feet means encountering a potential serious accident hazard every 4 seconds, equivalent to two accident exposures within the distance required to stop after seeing the first hazard.

The highway is already obsolete, its

usefulness largely dissipated by lack of access control. Yet the four lanes of pavement are physically as good as new, and of ample potential capacity. Rejuvenation of this section, by purchase of access rights now, would be possible, but fantastically expensive. It will be much cheaper to build a new road. And yet, 15 years ago, a relatively modest additional expenditure, and adequate state legislation, could have provided controlled access, which in turn, would have given a road that would be fully as useful now as on the day it was opened to traffic.

There are similar case histories to be found everywhere across the land — shortsighted monuments of obsolescence and the wastage of our resources. Is it any wonder, then, that the Congress wisely insisted on control of access on the Interstate System? And that all who are interested in getting the most for our highway dollar, should adhere to that dictum?

As to the present status of this Interstate program, it is on schedule. On March 31, actual construction was under way on 2,400 miles of the system. From July 1, 1956, to that date, construction had already been completed on 1,404 miles. The amount of money put into construction contracts during the 21 months totaled very nearly \$2 billion and an additional \$1.4 billion had been authorized for preliminary engineering and right-of-way acquisition. The spread in progress among states is wide, though the lagging ones show promise of catching up. In terms of available federal-aid funds obligated, I am happy to say, Texas is among the top twelve states.

That is where we are. Now, where are we going, and—since we have a specific goal—how fast? The 1956 highway act put the federal-aid program on a pay-as-you-go basis, with financing from highway-user excise taxes which go into a Highway Trust Fund. The law requires us to gear the yearly authorizations to the estimated Trust Fund receipts. Some months ago, it was evident that under the law we would have to drop back from the \$2 billion allocated to the states for the fiscal year 1959 to about \$1.6 billion for fiscal year 1960.

The federal-aid highway act, of 1958, signed last April, has considerably brightened this picture. For it set aside

the pay-as-you-go feature of the 1956 Act for two years. It increased the Interstate authorization for fiscal year 1959 by \$200 million, which was immediately apportioned to the states by Secretary Weeks, with Texas receiving \$11.6 million new monies.

For the fiscal year 1960, the effect of the new act is indeed potent. With the pay-as-you-go clause temporarily suspended and the Interstate authorization increased by \$300 million, the prospects in fiscal year 1960 are extremely bright. Instead of apportioning to the States \$1.6 billion in December, we will be able to make available the full \$2.5 billion now authorized, and do it this summer. Thus we will be making a gain of \$900 million and 5 or 6 months in time. We are confident that the States will meet the challenge of this increased tempo in the program.

The new act, incidentally, authorized Public Roads to apportion the 1960 funds on the basis of the estimate of the cost of completing the Interstate System, made by the States and submitted to Congress in January. Texas will receive 4½ percent of the total U. S. funds, or about \$113 million. This method of distribution among the States will do much toward attainment of the goal expressed by Congress: to complete the system simultaneously across the nation.

The provisions of the 1958 Act, with regard to the waiver of the pay-as-you-go restriction and authorization of the cost-of-completion method of apportionment, do not extend beyond the fiscal year 1960. Consequently, it would not be proper at the present time to speculate into the future in detail. The cost estimate reported in January showed a \$10 billion increase above the long-range financing authorized in the 1956 Act equivalent to about a one-third increase. A considerable proportion of that increase resulted from rising prices of highway construction.

Whatever the future holds, one thing is certain—a long-range program of this sort requires a great deal of advance planning. Many of the States and Public Roads are even now scheduling the specific projects to be built in the next 5 years, with the work that will remain thereafter grouped into two or three similar schedules for the ensuing period. Such plans must necessarily be some-

what elastic, and subject to continuous review. A program that involves wholesale land acquisition, dislocation of homes and businesses, relocation of utilities, and finally, construction, demands intensive advance planning by, and close cooperation among highway officials, engineers, and legislatures, and also contractors, equipment manufacturers, and materials producers, but most of all, the general public.

It is true that the 41,000 miles of the Interstate System seem to hold the spotlight in the public eye. But just as important is the continuing regular program for the improvement of the 737,700 miles of the Federal-aid primary and secondary highway systems and their urban extensions. Without them the Interstate System could provide very little service to the country—no more than can a high-voltage electric transmission line be of service without the many lower-voltage distribution lines and the millions of wires feeding current into individual cities, blocks, homes, businesses, and industries.

The 1958 Federal-Aid Highway Act has been referred to as an anti-recession measure. It is far more than that. I have already indicated some of its effects on the Interstate System program, and its provision for continuance of the regular primary, secondary, and urban programs.

One section of the 1958 Act was distinctly intended to be an anti-recession measure, judging both by the nature of its provisions and the discussion of the Congressional Committees. That section authorizes for the fiscal year 1959 an additional \$400 million for use on the primary and secondary systems and their urban extensions, for the purpose of immediate acceleration of the rate of highway construction of these systems, with consequent increase in employment. The \$400 million was immediately apportioned to the States on the day the Act was signed into law on April 16, Texas receiving \$24.3 million, which has already been put into the scheduled lettings to permit additional road jobs to begin immediately.

Turning to other provisions of the 1958 Act, the public hearings requirement, heretofore limited to cities, towns and villages, is extended to provide opportunity of hearings for persons in rural areas whose property is to be

crossed or touched by the Interstate System.

A completely new feature of the 1958 Act is the establishment of a national policy with regard to the control of outdoor advertising along the Interstate System. While general principles and restrictions are laid down in the law, the Secretary of Commerce is called upon to prepare national standards and enter into agreements with the States which seek the incentive bonus provided for in the Act. It is probable that a good deal of study and discussion with the States will be necessary before the definitive and practical working arrangements will be developed and put into effect.

One further point in explanation of the 1958 Act. The new law has been widely cited in the press as providing \$1.8 billion of Federal aid this year. That figure is composed in part of the \$400 million provided for immediate use on the primary, secondary and urban systems and the additional \$200 million for the fiscal year 1959 for the Interstate System, all of which has already been apportioned to the States immediately after passage of the Act. The remainder is composed of the authorizations in this Act for the fiscal year 1960: the \$900 million for the primary and secondary systems and the additional \$300 million for the Interstate System. Actually, as I have indicated, the whole Interstate apportionment for 1960 will be \$2.5 billion. As you can see, the reported \$1.8 billion does not take into account at all the authorizations for 1961 made in the new Act, which will bring the total for that year to \$3.425 billion.

It is in the Interstate program that we face some real problems, and it is here that public understanding and support are vital. If these main-line routes are to be adequate into the distant future as intended, sufficient rights-of-way must be obtained at the beginning. Design standards need not be extravagant but they should be generous—certainly no less than the minimums now adopted—and they should provide for an optimistic and expandable future. Access control, which is our best insurance against untimely obsolescence, must not be crippled by unwarranted exceptions.

All of these elements are expensive if

viewed narrowly in terms of present expenditure alone. But if they provide for and preserve the capacity of our most heavily-traveled routes for years to come, then they may be considered to be sturdy guardians of the huge highway investment we are now making. We are paying heavily now for our failure to spend wisely in years past. We must not make the same mistakes twice.

In addition to the peril of watering down these general features of the Interstate System, the States face another serious problem—the choice of detailed, final location of specific route sections, particularly in and near urban areas. The highway departments are trying to select the most feasible routes; the most economical ones, in terms of both immediate cost and long-range benefit. But all over the country, in metropolitan area and village alike, pressure groups are fighting both the State highway departments and each other. Businessmen want the route in a residential area; home owners want it in park land; nature lovers want it in the business area. Everyone wants the route—but over in someone else's front yard.

Americans, unfortunately, are to a great extent, a complacent people. If we are satisfied with the way things are going, we nod approval and sit home in front of the TV. Meanwhile, the small minority, who are "anti," often on the basis of prejudice, sometimes for hope of personal benefit, or, quite understandably, for fear of personal loss, or, even infrequently, because they see too narrowly, make noises like a multitude.

It is of utmost importance that Texas acquire as much information about this Interstate program as possible—what it means to the nation, to the State, to the home town, to the individual. Not only now, but in the future as well. We believe that full public knowledge will create wholehearted support among the vast majority of Americans who want better, safer, and—in the long run—cheaper highways.

With the support of the public, acting both through groups and individuals, we can continue to keep this Interstate program, and other highway programs, on schedule—a schedule that will provide for our traffic needs of today and tomorrow, not yesterday. ☆☆☆

... AASHO highlights urban planning, research and payola

transportation problem. One of these is AASHO's newly elected president, California's Jasper C. Womack (see page, p. 76).

The position of AASHO in regard to urban transportation was spelled out in Denver as part of a policy statement on highways in a national transportation policy. (Chief administrative officers of the member departments developed the statement for inclusion in a comprehensive study report to be submitted to President Kennedy in November.)

Key statements included these:

- Urban portions of the Interstate System should be planned and developed by the state highway departments as urban extensions and connections of the over-all highway network, in cooperation with appropriate local governments and interested federal agencies.

- The development of scientific relationships among transportation, land use and urban development should be explored and established in order that highways in urban areas may be properly planned to serve the greatest need.

- In major urban areas, where both highways and rail transit facilities are required, they should not be considered competitive, but should be planned to complement each other in an efficient integrated system for transporting people and goods with the desires of the public being the major guide.

William L. Slayton, Commissioner of the Urban Renewal Agency, spelled out his views at an important meeting of AASHO's Committee on Urban Transportation Planning. Said Mr. Slayton, "Upon our efforts rests the future of our cities. We must always seek complete coordination of our activities—to do less would be folly.

"We must rely on the development of a comprehensive planning process that is able to knit together at the local level highway planning, urban renewal planning, general land-use planning, school system planning and planning for each of the separate programs concerned with the improvement of some aspect of our urban environment."

Donald C. Wagner, managing director of the City of Philadelphia, told the same group, "Of the many groups that have been struggling with metropolitan transportation problems, each one has come to realize that separate policies on highways and mass transit must be merged in a common approach, based on total transportation as it relates to urban growth . . ."

Several speakers urged additional expenditures for research to keep pace with the needs of the accelerated highway program.

Said Federal Highway Administrator Wharton, "We need more research and

more application of research. We must see to it that research is in keeping with the needs of our programs."

Representative Blatnik also emphasized research, saying, "Highway research by all agencies has not kept pace with the accelerated program. More highway dollars must be utilized in research than has been the case in the past."

A proposal that the state highway departments pool some of their research funds is now out for approval by AASHO member departments. If approval (and money) is forthcoming, AASHO will take action on a specific group of research proposals.

Key AASHO committees have again postponed announcement of results of

the Ottawa Road Test. Flexible and rigid pavement design recommendations may be revealed next year. Recommendations as to maximum sizes and weights of vehicles may not be ready until 1963. Highway legislation that will come up for action in the next session of Congress was detailed by Rep. George Wallon (D., Md.) and Gen. L. W. Prentiss, executive vice-president of the American Road Builders Association. Expected proposals include:

- Biennial authorization for the ABC program for fiscal years 1964 and 1965.

- An amendment to the federal-aid highway law requiring assurances that satisfactory housing will be made available for families displaced by federal-aid highway projects.

U. S. highway experts touring the Soviet Union find lags

Russian Highways Aren't

A seven-man team of U. S. highway experts has concluded, after a 24-day tour of Russia, that the Soviet Union lags behind the United States in highway design, construction and research, but that Russia's road system is entirely adequate for her needs. Trains, planes and rapid transit—not motor vehicles—are the primary means of transport in the Soviet Union.

Russia's 1-million-mile road network (U.S. total: 3.5 million miles) is roughly comparable to this country's primary and secondary federal-aid highway system, the group found. The Soviets are not building, nor do they have on the drawing boards, anything to match the U. S. Interstate System.

The typical Russian intercity highway is a two-lane asphalt road with dirt shoulders and satisfactory grade and alignment. It accommodates a traffic volume of 1,000 to 4,000 vehicles a day, depending on location.

The American team, headed by Deputy Commissioner and Chief Engineer F. C. Turner of the Bureau of Public Roads, inspected the Russian road network September 3-26 under terms of a U. S.-Soviet technical and scientific exchange agreement signed in late 1959.

A nine-man group of Russian highway officials, headed by Nikolai Illich Litvin, chief of highway construction in the Ministry of Transport Construction, is currently in this country on a similar tour.

The exchange was to have taken place last year but was delayed after the Russians shot down the American U-2 spy plane.

Here are some of the conclusions and



F. C. TURNER of BPR lead U.S. team.

impressions of the American team after its visit to Russia:

- The Soviet Union has no present need for a superhighway system comparable to that being built in the United States. There are only 5 million vehicles (compared with this country's 76 million) to use its road system. Most of these—3.5 million—are trucks. The 1.5 million automobiles are concentrated mainly in cities, and are mostly taxis and government-owned cars.

- The Russian people have neither the means nor the freedom to travel extensively. A modern airline and excellent railroad system are the principal means of passenger travel. Railroads also move most of the freight. Trucks are largely limited to moving freight from farms or industrial plants to rail heads.

- About 25% of Russia's roads are surfaced; 10% paved.

- City streets are generally adequate.

• Transfer of financing of forest and public lands highways (about \$37 million per year) from the General Fund to the Highway Trust Fund.

• Transfer of aviation fuel receipts from the Trust Fund into the General Fund (about \$22 million in the current fiscal year).

• Reimbursement to the states for tollroads and some free roads incorporated in the Interstate System.

• Some form of legislation dealing with the urban transportation problem.

AASHTO went solidly on record as opposing "use of any Highway Trust Fund monies for any program other than now authorized by law."

Albert Atwell, a member of the transportation policy group consultants to the Department of Commerce and other governmental agencies, spelled

out plans for a proposed demonstration automatic highway.

Opening of a proposed 100-mile section of electronic road is at least four years away, says Mr. Atwell. A tentative timetable allows one year for analysis of an approach to the problem, another year of experimentation with basic systems and two years for construction.

Two research engineers reported the results of tests of nuclear devices to measure soil density and moisture.

S. H. Kuhn of South Africa reported that the nuclear method is nine times faster and just as accurate as traditional methods. Reliability is within 5% of actual moisture content and 3% density.

W. R. Brown, of the Colorado Department of Highways, reported that an extensive series of tests with one device resulted in 95% of the nuclear

moisture readings being within 2% of moisture contents determined by the traditional method. In density determinations 83% of the nuclear readings were within a tolerance of 3 lb per cu ft by a standard method.

William A. Bugge, director of highways for the State of Washington won AASHTO's Thomas A. MacDonald Award. Mr. Bugge is a past president of AASHTO, a previous recipient of the George S. Bartlett Award and current chairman of the Highway Research Board.

John C. Mackie, Michigan Highway Commissioner, was elected first vice president of AASHTO. Regional vice presidents are William Froeblich, Pennsylvania; H. H. Harris, Virginia; Walter Johnson, Kansas; and Bryce Bennett, Idaho.

in design, construction and research, and they conclude:

the Best, but They're Good Enough

Moscow is particularly notable for its wide boulevards. Pavement alone on many of these runs 150-175 ft in width.

Under development in the capital city (population 7 million) is a series of ring highways. The seventh of these rings is a four-lane, divided circumferential highway with controlled access designed to accommodate 20,000-25,000 vehicles daily. It is 62 miles long and scheduled for completion next year.

At the request of the Russians, the American delegation offered a critique of this project. The U.S. officials felt the Russians are making a mistake in not providing structures and space now for eventual widening of this highway to at least six lanes. They also criticized the lack of American-type speed change lanes at access points.

(The Russians accepted all criticism in good spirit and at all times treated the U.S. delegation with friendship.)

Russian construction methods are generally less satisfactory than this country's. There is not enough heavy rolling of fills and bases. Portland cement sealing is a problem. Harsh concrete mixes are used.

All equipment is noticeably underpowered by American standards. Pavement mixes are hauled in side-dump, non-agitator trucks. The mixes must be transported long distances from giant central mixing plants and often begin hardening en route.

The use of precast and prestressed concrete is almost an obsession with the Russians. They use it for long-span girders, footings, retaining walls, columns, caps and all sorts of components for buildings.

In construction as in other fields, they are obsessed with a drive to surpass the rest of the world by having "the biggest," even where bigness may be uneconomical and unrealistic, says Mr. Turner. For instance, in Leningrad they have built a six-story, brick asphalt mixing plant having a capacity of more than 1,000 tons an hour. It is larger than anything in this country, though there is serious doubt that the Russians really need a plant of this capacity.

The U.S. delegation generally learned nothing new from Russian research projects. They had expected the Russians to display a number of sonic or nuclear testing devices not used in the U.S., but they either don't have them or wouldn't show them. There were some indications that the Russians may be ahead of this country in research on welding techniques.

In addition to Mr. Turner, the Americans who visited Russia included O. K. Normann, deputy assistant commissioner of BPR's Office of Research; Eric L. Erickson, chief of BPR's bridge division; D. Kenneth Chacey, a Defense Department transportation official; Frank M. Mellinger, director, Ohio River Division Laboratories, Corps of Engineers; Robert C. Morrill, product division manager, Caterpillar Tractor Co.; and Charles E. Shumate, assistant chief engineer, Colorado Department of Highways.

The group went first to Moscow for briefings at the Ministry of Transport Construction and tours of highway projects and research facilities. Subsequently, it visited Leningrad; Kiev and Kharkov, Russia's Pittsburgh, in the Ukraine; Simferopol and Yalta in the

Crimca, where a new four-lane highway is being built across the mountains to the Black Sea; Mineralnyye Vody in the northern Caucasus; Tiflis, capital of Georgia, which is in the vicinity of the Turkish and Iranian borders; Tashkent, a city east of the Caspian Sea; and Alma Ata, which is near the border of Red China. The Tashkent and Alma Ata regions have only recently been opened to foreign visitors.

The Russian delegation arrived in Washington October 7 and will remain in this country through October 30. Last week, it visited BPR headquarters and two research laboratories in Washington and viewed various Washington bridges and the circumferential highway now under construction, the Washington-Baltimore Parkway, the Baltimore Tunnel and then traveled to New York City via the Delaware River Bridge, the New Jersey Turnpike and the Lincoln Tunnel. Over the weekend, it toured bridges, tunnels and highways sponsored by the New York Port and Triborough Bridge and Tunnel authorities.

This week's schedule carried the delegation to Albany and Buffalo, N. Y.; Chicago, the AASHTO road test site at Ottawa, Ill., and the Caterpillar Tractor Co. plant at Joliet, Ill. On Sunday, the group moves into the West, viewing existing highways and construction projects at Boise, Idaho; Grand Junction, Colo.; Salt Lake City, Utah; and Denver. Next Thursday, the delegation travels south to Dallas, the Corps of Engineers' Waterways Experimental Station at Jackson, Miss., and Atlanta. It returns October 30 to Washington for a final session with BPR officials.