

# TR NEWS



## ***Tribute to American Highway Legend Frank Turner***



### ALSO

- ◆ New Frontier for General Aviation?
- ◆ Hybrid Engines Rev Up Interest
- ◆ Highlights of TRB's 80th Annual Meeting



# TR NEWS

## Special Feature

Introduction

### 3 The Frank Turner Story

*Alan E. Pisarski*

The stories of transportation professionals who, like Frank Turner, have defined the field, provide a vital sense of continuing history and vision.

### 5 Francis C. Turner, "Father of the U.S. Interstate Highway System": An Historical Appreciation

*Bruce E. Seely*

Legendary transportation leader Frank Turner (1909–1999) crafted one of the great legacies of the "American century," an efficient network of state-of-the-art roadways traversing the United States. Members of TRB's transportation history committee, many of whom were personal friends, colleagues, and protégés, recently examined Turner's "place in history."

#### 7 A Delicate Balance: Politics and the Building of Roads

*Damian J. Kulash*

#### 9 A Man of Integrity

*Peter G. Koltnow*

#### 11 Facing the Issues

*Jonathan L. Gifford*

#### 13 It's Been Fun

*Francis B. Francois*

## 15 Hybrid Vehicles Go to Market: Will Gas-and-Electric-Powered Automobiles Fit the Bill?

*John German*

Hybrid vehicles have hit the U.S. market. Although sales are better than expected and more product introductions are coming, the price tags may delay widespread use. According to the author, an environmental and energy analyst, hybrids offer strategic advantages—such as low emissions and high fuel efficiency and do not require investment in new infrastructure.

## 23 NASA's Small Aircraft Transportation System: Envisioning and Realizing a New Mode of Travel

*Richard S. Golaszewski*

NASA has developed a blueprint for a new frontier of high-tech air travel—the concepts may not be as freeflying as on "The Jetsons," but the system promises improved safety for small aircraft and secondary airports, as well as new routes and convenient flight schedules, this aviation expert reports. A TRB study committee is evaluating NASA's plan.

## 30 Cost Sharing To Modernize Air Traffic Control and Airports

*Jane F. Garvey*

The Federal Aviation Administration is in the first stages of choosing projects to modernize the management of airport and airspace capacity; the projects will be funded through public-private partnerships.



15



39



**Cover:** Construction of U.S. Interstate Highway 84 through the Burnt River Canyon in Oregon (background photograph) enabled transportation through previously impassable landscape—one example of the vital achievements of the U.S. Interstate highway system, shaped by the hard work and vision of Frank Turner (insets: Turner receiving career award at age 90, and second from left, as President Dwight D. Eisenhower reviews a preliminary report on the system). See special feature tribute starting on page 3. [Photo credit for I-84 cover photo to Oregon State Highway Division]

# TR NEWS

features articles on innovative and timely research and development activities in all modes of transportation. Brief news items of interest to the transportation community are also included, along with profiles of transportation professionals, meeting announcements, summaries of new publications, and news of Transportation Research Board activities.

**TR News is produced by the Transportation Research Board Reports and Editorial Services Office**  
Nancy A. Ackerman, Director  
Javy Awan, Managing Editor  
Kristin C. Motley, Assistant Editor

## TR News Editorial Board

Neil F. Hawks, Chairman  
Nancy A. Ackerman  
Joseph A. Breen  
Walter J. Diewald  
Frederick D. Hejl  
Timothy Hess  
Nancy P. Humphrey  
A. Robert Raab

## Transportation Research Board

Robert E. Skinner, Jr., Executive Director  
Mark R. Norman, Director,  
Technical Activities  
Stephen R. Godwin, Director,  
Studies and Information Services  
Marcia A. Appel, Director,  
Administration and Finance  
Robert J. Reilly, Director,  
Cooperative Research Programs  
Neil F. Hawks, Director, Special Programs

**TR News** (ISSN 0738-6826) is issued bimonthly by the Transportation Research Board, National Research Council, 2101 Constitution Avenue, NW, Washington, DC 20418. Internet address: [national-academies.org/trb/](http://national-academies.org/trb/).

**Editorial Correspondence:** By mail to the Reports and Editorial Services Office at the address above, by telephone 202-334-2972, or by fax 202-334-3495.

**Subscriptions:** North America: 1 year \$55.00; single issue \$9.50. Overseas: 1 year \$70.00; single issue \$13.00. Inquiries or communications concerning new subscriptions, subscription problems, or single-copy sales should be addressed to the Business Office at the address above, or telephone 202-334-3216, fax 202-334-2519. Second-class postage paid at Washington, DC.

**Postmaster:** Send changes of address to *TR News*, Transportation Research Board, 2101 Constitution Avenue, NW, Washington, DC 20418.

**Notice:** The opinions expressed in articles appearing in *TR News* are those of the authors and do not necessarily reflect the views of the Transportation Research Board. The Transportation Research Board and *TR News* do not endorse products of manufacturers. Trade and manufacturers' names appear in an article only because they are considered essential to its object.

Printed in the United States of America.

Copyright © 2001 Transportation Research Board. All rights reserved.

## 32 Point of View Clearing the Air: To Reduce Automobile Pollution, Adjust the Car, Not the Driver

*Don Pickrell*

Severe air pollution from automobiles is now a myth, thanks to ongoing technological advances, according to this transportation economist; another myth is that land-use planning can cut automotive pollution even more.

## 35 Point of View: Counterpoint Transportation, Air Quality, and Thinking Big: Pollution Control Requires a Holistic Approach

*Lawrence D. Frank*

Technology alone will not solve air quality problems, a transportation planning researcher responds. Land-use planning must be part of a multifaceted, holistic solution.

## 39 2001 TRB Annual Meeting Highlights

Photographs and brief reports from TRB's Annual Meeting in January document some of the many opportunities for a record-breaking number of participants to share knowledge and perspectives and to learn about the latest developments in transportation research, policy, and practice.

## 51 Calendar

## 52 Research Pays Off

Biological Control of Purple Loosestrife:  
Wetlands Weed Meets the Beetles  
*Douglas Cygan*

## 54 Profiles

Traffic safety director Thomas Hicks and aviation expert Agam N. Sinha

## 56 News Briefs

NTSB plans new training facility, anti-icing system undergoes tests, Maglev competition advances, safety bar protects toll collectors, and more

## 59 Bookshelf

TRB Publications, 59

## COMING NEXT ISSUE

The upcoming May-June *TR News* will feature slugs, bodysnatchers, and other high-occupancy vehicle system phenomena.



# The FRANK TURNER Story

ALAN E. PISARSKI

The author is a transportation consultant and Chair, TRB Committee on Transportation History.

At the 75th Annual Meeting of the Transportation Research Board, David McCullough, the distinguished historian, reminded transportation professionals how important it is to remember and honor our “stories”—how our field has progressed, the major technical and institutional achievements, and the people who have made it happen. Maintaining our sense of history is the goal of the TRB Committee on Transportation History, which I currently have the privilege and pleasure to chair. At TRB’s 79th Annual Meeting in January 2000, the committee sponsored a special session to remember Francis C. Turner, whose talent, dedication, and enormous contributions to transportation over a lifetime of work merit a lasting place in history. The articles on the following pages spring from that session.

Frank Turner’s story is inextricably linked to that of the Interstate Highway System. He was one of a small group of individuals—including the man he worked for, President Dwight D. Eisenhower—who shared a vision to “change the face of America” and provided the leadership to make the national highway network a reality. Joining the U.S. Bureau of Public Roads in 1929, Turner spent his entire professional career at the Bureau and its successor, the Federal Highway Administration. He was appointed FHWA Administrator in 1969, after rising through the ranks to become the agency’s top career official. In 1994, *American Heritage* magazine named him as one of 10 “agents of change” who, although largely



Francis C. Turner receives the inaugural Frank Turner Medal for Lifetime Achievement in Transportation, established in his honor and made with his likeness.

unknown to the general public, transformed the lives of Americans in the previous 40 years. Turner was cited for “shaping the creation of the largest public-works project in the history of the world, the network of interstate highways that changed the country subtly as much as the transcontinental railroad did overtly.”

In his later years, I had occasion to get to know Frank personally as a member of an informal group—dubbed the “No-Name Group”—that he had helped organize, which met monthly for “show and tell” sessions on transportation issues. Although Frank, who was then in his eighties, was always the quietest member of the group, the meeting was always better when he was there. As his eyesight

faded, I started picking him up and driving him to the meetings. Frank lived alone in a modest home in Arlington, Virginia, located, I thought ironically, in one of the worst traffic situations imaginable; his driveway backed onto a T intersection with blind spots in two of the directions. I shuddered every time I drove in or out.

I treasured those trips with Frank—particularly after sessions in which the talk triggered some long-ago stream of thought or experience that he shared as we drove home. The occasion I remember best was his recounting of how the initial attempts to get funding for the Interstate Highway System in 1955 had ended in failure in the Congress. He was disheartened—it was both a bitter loss and a situation from which he could see no successful way





Path is cleared for construction on portion of Interstate 94 in North Dakota.

out. He was sitting in his office feeling rather disconsolate when Francis Dupont, Bureau of Public Roads Commissioner, passed by, saw Frank, and went back to his office only to return with a gift. It turned out to be a fine watch that Dupont had acquired on a trip to Europe and had planned to present to Frank in celebration of his victory. Seeing Frank so discouraged, Dupont decided that his gift would do more good immediately. He told Frank that the watch was intended not only to cheer him up, but to serve as a reminder that time sometimes works in your favor and that patience and continued effort eventually pay off.

By that point in his story, we had reached Frank's house. Once inside, I waited while he rummaged about and then brought out the watch. As I sat in his living room and held it, he told me of the subsequent efforts to devise a way to fund the system. Of course, we now know that these efforts were successful: in 1956—due largely to Frank's influence—the Interstate Highway System was

born. And—as we say in our committee—the rest was history.

As Chair of the TRB Committee on Transportation History, I am delighted that TRB has chosen this mechanism to remember Frank Turner. I am pleased to have the opportunity to introduce to the readers of *TR News* the work and thoughts of some very fine people about a very fine man. Appreciation must be expressed to Damian Kulash, President and CEO, Eno Transportation Foundation, and a member of the committee, for originally suggesting the session that was held at TRB's Annual Meeting in January 2000 to reflect on the life and achievements of this remarkable man, for assembling the panel members who contributed to this undertaking, and for organizing the materials from the session. I would like to thank all who served on the panel at the session and then turned the presentations into a permanent record that will be preserved so that in the future others can remember and honor the "story" of Francis C. Turner.

## Gold Standard for Transportation Professionals

In 1999, in honor of Frank Turner, a group of individuals and transportation organizations, with TRB serving as secretariat, established the Frank Turner Medal for Lifetime Achievement in Transportation. The award—presented biennially—recognizes lifetime achievement in transportation, as demonstrated by a distinguished career in the field, professional prominence, and a distinctive, widely recognized contribution to transportation policy, administration, or research. Turner was the first recipient of the award, which honored his extraordinary leadership and accomplishments in the development and construction of the U.S. transportation system; the medal was presented to him at the 1999 TRB

Annual Meeting before his death at the age of 90 in the same year. Federal Highway Administrator Kenneth Wykle commented at the time of his death: "Through nearly 70 years of extraordinary service to the American people, Mr. Turner's contributions to transportation remain unparalleled in this century and provide a firm foundation to move us forward well into the 21st century. His visions and lifelong dedication to transportation have set a standard for our agency and for every federal highway administrator."

In January 2001, the Frank Turner Medal was presented to Mortimer L. Downey, former Deputy Secretary of the U.S. Department of Transportation (see article, page 48).

# FRANCIS C. TURNER

## *Father of the U.S. Interstate Highway System*

AN HISTORICAL APPRECIATION

BRUCE E. SEELY

*The author is Professor of History, Science, Technology, and Society, Michigan Technological University, Houghton.*

**A**mong the many distinctions of his long and illustrious career, Frank Turner was the only person to rise through the ranks to serve as head of the Bureau of Public Roads (BPR)—the federal agency that, along with its successor, the Federal Highway Administration (FHWA), has guided American road-building efforts since the 1890s. Yet Turner shared with his predecessors at BPR certain common characteristics. Like them, he was an engineer devoted to public service. In a career that spanned decades, he was an unchallenged expert in his field, providing a remarkable degree of continuity and stability to the U.S. highway community. At the same time, like those before him at BPR, Turner was a self-effacing man who sought neither attention nor fame, while holding to the belief that the nation would be served best by letting nonpolitical technical experts oversee its road program. Turner also shared with his predecessors a deep commitment to the federal-aid system of shared federal-state funding and construction as the cornerstone of the nation's highway policy.

### Early Years

Turner as a student in his final year at Texas A&M University, 1929.



Turner studied civil engineering at Texas A&M College in the late 1920s, graduating just before the Depression in 1929. He joined BPR as a junior highway engineer and was assigned to its Division of Management. There he focused his attention on field studies of highway



Francis C. Turner

construction techniques aimed at increasing the efficiency of road-building machinery. Time-and-motion studies were much in vogue, and BPR conducted studies on the use of steam shovels and the application of trucks to road building. Turner was among those who used these and other techniques to improve the mechanization of road construction.

In 1933, Turner was posted to the Bureau's Arkansas division office. The division offices were BPR's front line, for they not only approved state plans and estimates for construction within the federal-aid system, but also helped upgrade the capabilities of state highway departments. Many rural and southern states had formed road-building organizations only after the Federal-Aid Road Act of 1916 made having such an organization a requirement for receiving federal funds. A number of these states lacked progressive traditions of engineering control, and many states allowed political influence free reign in their road-building programs.

BPR patiently pressed the states to embrace good engineering and efficiency, but Arkansas in particular appeared resistant to this approach. In the mid-1920s, Thomas H. MacDonald, then Chief of BPR, suspended the state's federal-aid construction funds to send a clear message to the politicians. The outlook had improved by the time Turner arrived in Little Rock in 1933, but he still gained first-hand experience in the delicate process of managing the federal-aid road program. MacDonald always insisted that federal engineers respect their state counterparts and seek to improve state capabilities. This effort required as much diplomatic skill as technical expertise.

Turner also developed an interest in maintenance issues during his years in Arkansas, and

In 1949, Turner was involved in U.S. efforts to develop and train an engineering organization to support a transportation network in the Philippines.



studied the connections between road maintenance problems and subgrade and soil base characteristics. Soil mechanics was just beginning to be recognized in highway engineering, thanks largely to BPR-funded research programs whose results were being reported at the annual meetings of the Highway Research Board, predecessor to the Transportation Research Board. Turner's work in this area, which earned him a graduate degree in civil engineering from Texas A&M University in 1940, revealed his understanding of the salient cutting-edge technical issues of the day.

### From Alaska to the Philippines

Turner's next move within BPR was to the agency's Washington headquarters and the Construction Division in 1940. At the time, wartime priorities in the use of materials limited road construction to the most important projects, including emergency landing fields, access roads to military bases and vital production facilities, and a few urban projects. Then in 1943, MacDonald sent Turner to handle the maintenance challenges associated with the new Alaska Highway, which ran from Dawson Creek, British Columbia, to Fairbanks, Alaska. This feat of highway engineering was completed in months, despite its remote wilderness location, floods, and brutal winter weather. When the road opened in late 1943, Turner faced the challenging maintenance chore of keeping it passable and open. He was the last American to leave the road project after the war ended.

With a solid reputation for leadership, Turner returned to Washington in 1946, only to be sent off to the Philippines—a staggering shift in climate! Part of a U.S. mission to develop and train an engineering organization to support that country's transportation network, Turner was soon involved in all aspects of American efforts to rebuild and reconstruct the island nation. In 1949 he became the coordinator for aid efforts from nine different federal agencies. Again

he proved a capable problem solver, and when he returned to Washington again in 1950, he became assistant to then-Commissioner MacDonald.

Among Turner's many new responsibilities was oversight of BPR's various foreign-aid programs related to highways. Turner coordinated the Inter-American Highway effort, as well as technical assistance programs in Ethiopia, Turkey, Liberia, and elsewhere. He also took on special assignments for MacDonald, who was nearing the end of a distinguished career. It was at this time that Turner found himself in a perfect position to contribute to the Washington debates concerning a massive new federal-aid highway initiative—the Interstate Highway program.

### Father of the Interstate System

BPR's 1939 report *Toll Roads and Free Roads* had first proposed a national network of intercity roads. A more detailed vision was developed by the National Interregional Highway Committee, appointed by Franklin Roosevelt in 1941, and was accepted by Congress in 1944. BPR had urged the states to begin planning these interregional highways so work could begin when the war ended, and a map showing preliminary routes for a 40,000-mile network of express roads was authorized in 1947. Congress appropriated the first \$25 million for construction in 1952, but this was a drop in the bucket considering the huge costs involved. Moreover, the states were under enormous pressure to improve other road systems to meet the postwar growth in new cars, and most states could not fund the usual federal-aid match of 50 percent of a project's cost. Through the early 1950s, even as traffic mounted in the states, Congress remained deadlocked on road spending, not just for the Interstate system, but for all elements of the federal-aid network.

Turner found himself squarely in the middle of this political struggle. Thomas MacDonald retired from BPR in 1953 and was succeeded by Francis DuPont, a strong supporter of the Interstate program. President Eisenhower also backed the initiative and grew increasingly frustrated at the congressional impasse. In 1954 he appointed the President's Advisory Committee on the National Highway Program, hopeful that chairperson and former wartime colleague General Lucius Clay would find a way to satisfy the many constituents of the nation's road-building program. Turner became the committee's executive secretary. In that capacity he performed much of the work behind the committee's final report, drawing on the full resources of the Bureau for statistics and other material.

Not surprisingly, BPR's ideas shaped many, but not all, elements of the committee's report. Among

## A Delicate Balance Politics and the Building of Roads

DAMIAN J. KULASH

The United States has been historically on-again-off-again about roads. Highway policy was a major national issue when the National Road was proposed and debated in the first half of the 19th century. But with the rise of railroads starting in 1850, highways moved off center stage and became the stepchildren of counties, townships, and even smaller units of local government. By the time the auto age dawned, these local road organizations were notorious for their ineptitude. Their staff were surrounded by political uncertainty, and many were unable to attract people with the vision, technical skill, and leadership needed to do the job.

The pendulum swung back with the Good Roads movement, begun by bicyclists and then taken over by motorists. As responsibility for roads returned from the local to the state and national levels, a new breed of professionals emerged, and they sought to insulate themselves from politics. Professional-

ism came to mean continuity and resistance to changes instigated by political leaders.

The nation regained its interest in roads as Frank Turner was growing up. He was 7 years old when the first federal-aid highway act was passed in 1916, and he was 9 when Thomas H. MacDonald took over as head of the Office of Public Roads, which later became the Bureau of Public Roads.

Turner was 20 years old when he joined BPR as a junior highway engineer in 1929. He rose rapidly and served in a series of posts, ultimately becoming Administrator of the Federal Highway Administration. As his career evolved, his distinctive professional style emerged—a style that appeared technocratic and data-driven on the one hand and quite astute at cooperating with political forces on the other (1). In *Divided Highways*, Tom Lewis describes Turner as “a quiet man with an encyclopedic knowledge of engineering and the history of

the federal government's involvement in highway building—and able to get jobs done in a businesslike and efficient manner. . . . In the highly charged political atmosphere of Washington, Turner stood apart (2). This careful balance of technocratic and political agendas is at the heart of the Frank Turner story. Each of us in the transportation community must strike some such balance as we attempt to bring our professional insights into the arena of public decision making.

### References

1. Seely, B. E., *Building the American Highway System: Engineers as Policy Makers*, Philadelphia: Temple University Press, 1987.
2. Lewis, T., *Divided Highways: Building the Interstate Highways, Transforming American Life*, Viking, 1997.

*The author, 1998 recipient of TRB's Roy W. Crum Distinguished Service Award, is President and Chief Executive Officer, Eno Transportation Foundation, Inc., Washington, D.C.*



Turner (second from left) is present as President Dwight D. Eisenhower receives report from the Advisory Committee on the National Highway Program in January 1955.

the committee's departures from the Bureau's traditional stances were a suggestion to finance the Interstate program with bonds and a proposal to establish an independent federal road-building authority. Both ideas met with strong congressional resistance. In the end, the Clay plan was rejected by Congress in 1955, and the deadlock over road funding remained.

Turner's role did not end, however. He became BPR's behind-the-scenes point man on matters related to federal highway legislation. In 1955 and 1956, during the final political struggles involved in developing the Interstate system, Turner assisted various House and Senate committee chairs as they refined their ideas. MacDonald had played a similar role in steering the federal-aid program through Congress in the early 1920s. Turner proved equally successful in a quiet but effective effort to shape American highway policy, and in 1956 Congress



created the National System of Interstate and Defense Highways with a projected price tag of \$25 billion. As the Federal Highway Administration's history notes of Turner, "More than any other single individual, he may be said to be the 'Father' of the Interstate Highway System" (1, p. 180).

Turner earned this moniker because his diplomatic skills and reputation for technical expertise proved essential in congressional acceptance of the Interstate initiative. But we should also remember that Turner relied on positions advocated by BPR since the late 1930s. For example, the Bureau had always opposed toll financing, and both the Clay committee and Congress affirmed this position. Moreover, BPR's reliance on highway planning survey data and technical information produced a vision of highways as transport paths and arteries of commerce, not tools for planning or land-use determination. This priority also was reflected in the Interstate legislation. Finally, the Bureau's most basic argument—that engineers and experts should guide highway construction efforts—was incorporated in the 1956 legislation through the creation of an autonomous trust fund, a predetermined map based on traffic patterns, and BPR oversight of standards and construction.

### A Difficult Birth

In 1957 Turner began a new phase in his career, this time as formal leader of BPR. For the next 10 years he served as Deputy Commissioner and Chief Engineer for Public Roads—a post that made him the Bureau's operating officer. His challenge now was to implement the program he had worked so hard to move through Congress. The task was huge. Although a few state highway departments had been developing detailed plans for multilane express roads since the early 1940s, the task of building a national system of such roads across the country and through cities was unlike anything in the experience of highway engineers. Even highway departments in California, Michigan, and Illinois—states with experience in the design and construction of high-speed, limited-access highways—found it difficult to move projects quickly from the drawing board to reality. In every state, the urban sections of the system in particular posed enormous difficulties in such areas as property acquisition, design requirements, and access roads.

Like the states, Turner's BPR moved quickly to cope with the demands of the largest public works project in history. Unfortunately, neither BPR nor the states were altogether prepared to launch the program, despite the years of congressional delay in providing funds; both had to scramble to hire and train additional engineers. The Bureau needed engi-

neers to inspect and approve state plans, specifications, and estimates—the day-to-day routine that had always been at the core of its work. The agency also worked to ensure the suitability of design standards for the new roads by funding research projects and cooperating with the American Association of State Highway Officials (predecessor to the American Association of State Highway and Transportation Officials) in the development of urban and rural Interstate design handbooks that became bibles for state highway department engineers. The result was a slow start to construction and substantial frustration all around. BPR and the states devised the means for moving projects forward, while the public clamored for more roads—especially Interstate routes—and congressmen pressed for ribbon-cutting ceremonies.

Pressure for instant results was only one dimension of the challenges facing Turner and the Bureau, for the financial rules of the game had also changed. In the past, the federal-aid road program had been based on a 50/50 state-federal funding match and an equal distribution of authority. But the cost and scope of the Interstate program forced Congress to accept a different formula, in which the federal government paid 90 percent of the cost. When Interstate work started slowly, senators and representatives questioned BPR's management of the program, focusing on a few highly publicized cases of corruption, fraud, and waste in the states. Turner presided over the resolution of these and other difficulties during the tumultuous early years of Interstate work in the late 1950s. In the end, congressional hearings revealed only that the Bureau was, as always, cautious with taxpayer money.

By the end of the decade, federal engineers had developed ways of expediting projects in states with sound engineering staffs and watching more paternally those feeling their way. Ohio, for example, developed an assembly-line approach that led to the Bureau's rapid approval by using standard designs and maintaining good relations with BPR engineers during the design process. And by 1960, the mileage of highway opened had increased, ending the period of special congressional scrutiny.

### New Challenges

Just as the initial growing pains were diminishing, however, a new kind of challenge emerged to confront the highway-building community. Through all of the debates about increased funding for roads and the Interstate program, road builders had assumed that Americans remained, as they had been since the start of the century, eager supporters of highway construction. The most obvious measure of the popularity of the automobile may have been the will-

# A Man of Integrity

PETER G. KOLTNOW

In my volunteer work at the Smithsonian's National Museum of American History, I have gathered well over a hundred oral histories that are largely personal reminiscences, and often essential to an historical record. And so I offer a personal recollection about Frank Turner.

During an annual meeting of the American Association of State Highway and Transportation Officials in New Orleans, Frank and I wandered off to find the best lunchtime beignets and coffee that the French Quarter had to offer. We were prepared to miss both AASHTO's luncheon offering and the first afternoon session—no great sacrifice. With the arrival of food, Frank was in a good mood and showed the humorous side of his nature that was most often evident in the company of old friends from Texas. Many people were unaware of Frank's sense of humor because he had the most economical smile I have ever seen; his teeth rarely showed as an indicator of his state of mind.

Frank had something on his mind besides coffee and beignets. I was there as a representative of the truckers, and he was trying to resolve the never-ending battle between truckers who wanted higher axle loads and highway authorities who were trying to preserve pavements. Frank pulled out a piece of paper showing how one might slip an extra axle under truck trailers, thus reducing axle loads and perhaps even permitting heavier overall weights. Well, nothing is that simple, and we spent a pleasant half hour tossing his idea around. We agreed that the subject needed more research, field testing somewhere in the world, and an analysis of the financial and political impacts.

It occurred to me then that there was nothing very startling about his suggestion except the fact that he had made it. His approach to the problem and its solution was just what one would expect from someone in his role and with his background. Frank was his organization's leader not so much because he excelled, but because he epitomized the dedicated, informed public servant. He was mission-oriented, not process-driven. As such he accepted the validity of someone's problem and his responsibility to his employer—the public—and to his field—civil engineering—to examine fairly the needs and interests of all parties. To satisfy Congress and the Administration, often skeptical about the Interstate program, and to meet his own standards, Frank built an organizational edifice renowned for controlling costs and eliminating corruption. One could argue with his point of view, and many did, but it was impossible to question his integrity.

I miss Frank, even though we often found ourselves on opposite sides of the table. A dozen years ago a group of Washington policy wonks decided to form a breakfast club to discuss current transportation matters privately and with utter frankness. Those approached on the subject uniformly insisted that Frank Turner had to be involved as a guarantor of integrity and constructiveness.

Frank enjoyed those postcareer meetings. He brought ideas. He recounted ancient but still germane history with accuracy. And once in a while, even though you could not see his teeth, he would smile.

---

*The author, who received TRB's W. N. Carey, Jr., Distinguished Service Award in 1982, is a transportation consultant in Bethesda, Maryland.*

ingness of drivers to bear state and federal gasoline taxes without serious complaint, especially when those taxes were earmarked for road work. This love affair with the automobile blinded road engineers and their supporters to complaints, few at first, from individuals in cities who objected to the loss of their property or to other side effects of new roads. As the 1960s dawned however, such complaints began to increase, especially as thousands of people living in the path of urban Interstates became vocal about the loss of their homes through eminent-domain con-

demnation and about the low value assigned their property. The lack of relocation programs in the early years added to this chorus of complaints.

Still other objections came from those concerned about aesthetics, about the manner in which these roads divided neighborhoods, and about their impact on parks and open spaces. Complaints were voiced as well by those living outside the cities: by roadside motel owners whose facilities were no longer easily accessible to Interstate traffic and by individuals worried about the impact of the roads

The first Secretary of Transportation, Alan S. Boyd, addresses a meeting on highway beautification, as Frank Turner, Director, Bureau of Public Roads, listens.



on areas of special beauty or historical importance. The “freeway revolt” that grew from these various origins gained force as the 1960s progressed, and took roadbuilders by surprise. Raucous public hearings and bitter legal battles ensued in many places, and eventually caused work to be delayed and in a few instances abandoned. Battles in New Orleans, San Francisco, Pittsburgh, Philadelphia, Washington (D.C.), and Boston, among other places, attracted national media attention.

Such confrontations were especially difficult for highway builders to accept because the traditional approach to decision making about roads in this country was based on the assumption that it was best to remove politics from the process whenever possible. This view owed much to the turn-of-the-century assumption that experts could remove waste and corruption if they replaced politicians in decision-making roles. The Interstate system, delayed for so long by congressional politicking, engendered a renewed desire in state and federal highway offices for a return to the apparently apolitical approach that had characterized the 1920s and 1930s. An example of the virtues of this decision-making process is the remarkably broad consensus within the technical community about the standards for Interstate construction. Through the cooperative forums afforded by AASHO and HRB, BPR’s ideas were kept before the community and basic consensus developed.

The story was different when it came to locating the actual routes and setting construction schedules. In these matters that required public contact,

both state and BPR engineers preferred to operate as they always had—by developing and maintaining close ties with small numbers of influential business and civic leaders. This approach kept the process manageable and eliminated delays.

Turner was perfectly comfortable with this view of policy making. Yet one might argue that this small-group approach excluded other stakeholders from the process and thereby caused controversy (2). By the end of the 1960s, everyone wanted a say in the decision-making process, and procedures slowly shifted to accommodate those desires. After 1962, local officials had to be more involved in planning, while much more attention was given to the relocation of property owners in the paths of Interstate roads. Additional public hearings were required at earlier stages of the planning process, and the National Environmental Policy Act introduced the requirement for mandatory environmental impact statements. The making of decisions by small groups was a thing of the past.

## A Broader Vision

Turner presided over this sea change in public expectations about highway planning and development. In 1967 he became Director for Public Roads, a post he held until 1969 when he achieved the pinnacle of the U.S. road-building community, becoming Federal Highway Administrator. In this position, which he held until his retirement in 1972, he had primary responsibility for connecting road builders to both the executive branch and Congress.

These were tumultuous years, and the changes that took place did not come easily for Turner, for other federal road engineers, or for their state counterparts. State officials often resisted, as did some FHWA engineers, the changes imposed on them by new congressional mandates. Many later expressed frustration at the additional complexity created by greater attention to environmental concerns; others considered the highway beautification efforts launched by Lady Bird Johnson to be trivial. Turner himself made it clear that he believed highways to be the most important element of the nation’s transportation system. Yet he also recognized that the environment within which highways were built was being fundamentally altered during the 1960s, and he accepted the need to adapt to the new conditions.

Not all state officials approved of the shift in direction at FHWA; however, the 90/10 matching structure of the Interstate program gave the federal engineers the upper hand. Yet Turner managed to make changes while preserving the federal-aid partnership with the states. One element that helped



# Facing the Issues

JONATHAN L. GIFFORD

I probably worked most closely with Frank Turner in connection with a retrospective study of the Interstate system in the late 1980s, sponsored by the American Association of State Highway and Transportation Officials. Frank served on the steering committee for the study, and I was part of the research team. I clearly remember his admonition to the study team at a retreat held in Washington that the study be a "management audit" of the Interstate program to help shed light on both its successes and those areas where things could have been done better. The study was not to be a whitewash of the program.

I was a fairly serious critic of the Interstate program at the time. While in graduate school, I was a car-hating city dweller who rode the cable cars and BART from San Francisco to Berkeley every day and got my news from *Mother Jones* magazine. I chose to write about the Interstate highway program because I could not understand how such a well-intentioned program could have been implemented in a way that was so devastating to American cities. So I had a lot of fairly radical ideas about this management audit of the Interstate program.

I should say that a friend subsequently gave me a gift subscription to the *Wall Street Journal*, and before finishing my dissertation I had come around to agreeing with much of what I read on its editorial page. My parents sealed my fate by giving me one of their castoff cars, a 1977 Olds diesel Delta 88, which weighed about 4000 pounds. So much for the car-hating radical!

Frank and I never discussed what happened to the Interstate program beginning in the 1970s, when the backlash began to develop against some highways in urban and environmentally sensitive rural areas. This was a tremendously wrenching time for those who had dedicated their careers to building America's superhighway system. Suddenly they found themselves condemned as public enemies; ravagers of the environment; and stooges of a corrupt conspiracy of big oil, auto manufacturers, and construction interests.

This antihighway backlash had very little to do with the progressive scientific road building of the Bureau of Public Roads that Frank joined in 1929. Rather, it represented a conflict over values, something for which most engineering programs have historically done little to prepare their graduates. As a society, we are still in the middle of a debate about the proper balance among highways, communities, and the environment. The broad consensus that emerged in the 1950s with the birth of the Interstate program broke down in the 1970s and 1980s, and a new consensus has yet to emerge.

Frank and the progressive era of which he was a product offer us a lesson as we seek to resolve these difficult conflicts today. The bottom line is that we need to be willing to face a management audit of our activities—not just highways, but transit, HOV lanes, new urbanist principles of development, and other popular ideas. Just as Frank was not afraid to uncover the warts and errors of the Interstate program, just as the BPR of the 1930s was willing to take a cold hard look at the successes and failures of the primary highway program of the previous 20 years, we need to stand back and examine where we have been spending our funds in the 20 years since the Interstate system was completed.

The pressures are great. Urban road traffic is growing quickly, many communities have reserved little room for new or expanded roads, HOV lanes and transit serve an important but small part of the commuting market, and the commuting market is a shrinking part of the overall urban transportation sector. People want to travel more, but communities are reluctant to provide the road space for them to travel on. The lesson of Frank's career is the importance of facing the issues squarely and then working determinedly to resolve them. We can only hope to succeed a fraction as well as he did.

---

*The author is Associate Professor, Public Management and Policy, George Mason University, Fairfax, Virginia.*



Frank Turner is sworn in as Federal Highway Administrator. *From left:* George H. Fallon, Chairman, and John C. Kluczynski, member, House Committee on Public Works; Mrs. Turner; Administrator Turner; Secretary of Transportation John A. Volpe; and Senator Jennings Randolph, Senate Committee on Public Works.

hold together the coalition that had existed since the 1910s was a continued sense of shared responsibility for meeting the technical challenges of building the Interstate system. This was a big, exciting job, and the new political climate simply added another dimension to the design problem.

In this context, open communication became critical, particularly in getting the technical data into the hands of state designers. Playing a pivotal role were AASHO's long-standing technical committees, where federal and state engineers worked side by side, and the HRB technical committees, where the equally cooperative structure brought universities and the producers of materials into the discussions. In the end, however, the key to successfully managing the Interstate program while holding the federal-state partnership together involved three elements.

First was Turner's insistence on adhering to the shared-responsibility approach in day-to-day operations. In Ohio, for example, state engineers later recalled that two BPR engineers would come out to the field once a month to observe progress on Interstate efforts. These trips reinforced the sense that everyone was working toward a common objective,

although BPR retained the upper hand through its dominant financial contribution.

A second element in maintaining the federal-state partnership was BPR's focus on the bigger picture of producing the best possible road network. The new road system was a massive effort full of challenges, the cost was immense, and BPR emphasized the importance of doing it right.

Finally, Turner recognized how to broaden the relatively narrow perspective of highway engineers—including BPR's own long-term vision of building roads to move as many vehicles as feasible at the highest possible speed. In his 1967 address to the AASHO annual meeting, he analyzed what he perceived to be happening in the country (3, p. 208):

There is a feeling that highways are too complex and far-reaching in their implications to be left exclusively to state highway departments and the BPR. Powerful interests are proposing to give control of the decision making parts of the program to local government representatives and citizens groups. Along with this, there is a growing feeling that highway programs must be subordinated to serve a wider variety of non-highway purposes.

Turner's assessment was quite correct, as was his understanding that continuing to operate in the old way would have serious negative consequences. All of the newer concerns—environmental considerations, unemployment issues, community and lifestyle perspectives, the preservation of historic sites, beautification and land-use matters, and mixed urban transportation programs—would have a place in the federal policy arena.

Indeed, Turner was actually drawing on an element of continuity within BPR in holding this view, for engineers such as H. S. Fairbank and Joe Barnett had long argued that the American highway program needed to embrace a broader vision that included attention to aesthetic, landscape, land-use, and other social considerations. They had pressed for such elements as early as the 1930s. And the generation of highway engineers who came to the field after 1970 were talking about highway design in a new way. They not only accepted the new design factors, but believed those changes were resulting in the production of better highways.

## Roads and Modes

However much Frank Turner accepted the need to make adjustments in the perspective of the road-building community, he always remained a highway man. Indeed, it was precisely for this reason that his

# It's Been Fun

FRANCIS B. FRANCOIS

It was my honor to have known Frank Turner, to have observed him, and to have sought and received his counsel on many occasions during my 18½ years as Executive Director of the American Association of State Highway and Transportation Officials. Thus I am pleased to have the opportunity to provide some personal perspectives on a man I regard as a mentor and as a truly historic person.

I did not meet Frank face to face until 1980, after I became Executive Director of AASHTO and some 8 years after he had retired from federal service. But our paths crossed in the years between 1966 and 1980, when I served as a member of the governing body of Prince George's County, Maryland, and on the boards of the Metropolitan Washington Council of Governments (WASHCOG) and the Washington Metropolitan Area Transit Authority (WMATA). This was an intense period in the transportation history of metropolitan Washington. During those 14 years, WASHCOG, WMATA, and our local governments had strong views on a number of critical issues, views that were sometimes at odds with those of the Maryland and Virginia highway and transportation agencies. The Federal Highway Administration also had strong views, and until he retired in 1972, Frank had the primary responsibility for advancing them. As a result, we had many opportunities to watch him in action.

We saw a quiet, strong, fair man of great integrity, a highly competent engineer, and a person dedicated to providing the best possible highway capacity for the region. But we also saw a man who knew compromises were needed and who worked with the states, WASHCOG, and our local governments to achieve them. Frank Turner was a bold man who thought beyond traditional highways.

When I came to AASHTO, Frank offered his counsel to me, and I gladly accepted. Indeed, to a great extent, whatever I did to further America's highways while I was Executive Director of AASHTO can be traced at least in part to Frank Turner's counsel and advice.

Throughout my years with AASHTO we talked many times, on many issues. We examined the role of highways in America, and the need to plan for their renewal and changes to accommodate growing traffic. We discussed the need for transit in urban areas and the importance of finding ways to improve highway design to accommodate transit vehicles. We discussed what had been learned from the AASHO road test and the impact of increasingly heavier trucks on the system.

Frank was a strong supporter of the federal-state partnership in the federal-aid highway program, and he urged me to work to strengthen the state highway agencies and AASHTO to further that partnership. He talked with me about the need for a strong, ongoing highway research program and the importance of providing both technical training and program management skills to FHWA, state highway agency, and private-sector personnel. His dedication to quality highways led him to help found the AASHTO Materials Reference Laboratory as a partnership between FHWA and AASHTO. The laboratory continues to play an important role in ensuring good-quality asphalt highways across the nation.

Frank also talked about the need for all agencies to plan ahead and to develop the new leaders that will be required in the coming years. He practiced this concept himself. Over the years he reviewed every new class of Bureau of Public Roads/FHWA professionals and identified those

he believed might become leaders. He then quietly followed their careers, and when a vacancy opened, would reach into his pool for a candidate.

Frank understood his role and his federal authority and responsibility, but to the fullest extent possible wanted to work in partnership with the states. The esteem in which he was held by AASHTO is demonstrated by his receipt in 1962 of the organization's highest award—the Thomas H. MacDonald Memorial Award. In 1964 he was honored again, this time jointly by AASHO, the Highway Research Board, and the American Road and Transportation Builders Association, with the George S. Bartlett Award.

Frank has received important recognition for the changes he brought to 20th-century America, and to the world. In 1994, *American Heritage* magazine cited him as 1 of 10 unsung persons who brought great change to the nation during the 20th century. In 1999, *U.S. News and World Report* wrote about Frank Turner under the headline "The Superhighway Superman."

I have two favorite quotations of Frank's. The first is just one word long. He was often asked, "When will America's highways be finished?" His invariable reply was, "Never."

The second quotation is a little longer, and demonstrates that Frank knew himself well. At TRB's 1999 Annual Meeting, he was asked to comment after he had received the first-ever Frank Turner Medal. He stood at his table, and with that special smile we so often saw simply said, "It's been fun."

---

*The author is a consultant in Bowie, Maryland. He received TRB's W. N. Carey, Jr., Award for Distinguished Service in 1989.*



Dedication of the Francis C. Turner Building on May 5, 1983, at the Turner-Fairbank Highway Research Center. From left: FHWA Deputy Administrator Lester P. Lamm, former FHWA Administrator Frank Turner, Secretary of Transportation Elizabeth Dole, and FHWA Administrator Ray A. Barnhart.



words carried weight when the time came to make changes. His vision, in the end, required that road builders pay attention to the relationship of highways to the entire transportation picture. For Turner, this meant accepting that roads were the most important transportation system, even in the multimodal transport world that was unfolding in the last years of his service to FHWA. Only roads, he argued, allowed for connections between the various modes.

Intriguingly, this conception summarizes the situation of American transportation as we enter a new century. It also defines the work of transportation professionals at the state and federal levels. Frank Turner deserves a significant share of the credit for demonstrating how this realization could be incorporated within the long-standing traditions of BPR leadership and within the structure of the federal-aid partnership

## References

1. *America's Highways, 1776–1976: A History of the Federal-Aid Program*. Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., 1976, pp. 185–87.
2. Leavitt, H. *Superhighway—Superhoax*. Garden City, NY: Doubleday, 1970; see also Kelley, A. B. *The Pavers and the Paved*. New York, D. W. Brown, 1971.
3. Olivier, D. C. "In Footsteps of a Giant: Francis C. Turner and Management of the Interstate." *Transportation Quarterly* 48 (Spring 1994): 199–220.

## Bibliography

- "Frank Turner Medal for Lifetime Achievement in Transportation is Established." *ITE Journal* 69 (March 1999): 22.
- Ideas and Actions: A History of the Highway Research Board, 1920–1970*. Highway Research Board, National Research Council, Washington, D.C., 1970.
- Rose, M. H. *Interstate: Express Highway Politics, 1941–1989*. 2d ed. rev., Knoxville: University of Tennessee Press, 1990.
- Rose, M. H. and B. E. Seely. "Getting the Interstate System Built: Road Engineers and the Implementation of Public Policy, 1955–1985." *Journal of Policy History* 60 (Winter 1990): 24–55.
- Seely, B. E. *Building the America Highway System: Engineers as Policy Makers*. Philadelphia: Temple University Press, 1987, pp. 109–14.
- Seely, B. E. "People in Public Works: Logan Page." *APWA Reporter* 53 (December 1986): 4–5; reprinted in R. D. Bugher, ed. *People Making Public Works History: A Century of Progress, 1894–1994*. Kansas City: American Public Works Association, 1998, pp. 175–76.
- Seely, B. E. "The Highway Research Board and the Federal-Aid Highway Program: A Cooperative Partnership." *TR News*, No. 150, September–October 1990: 9–14.
- Seely, B. E. "Urban Freeway Development and the Bureau of Public Roads, 1930–1950." *SCA [Society For Commercial Archeology] Journal* 15 (Spring 1997).
- The States and the Interstates: Research on the Planning, Design, and Construction of the Interstate and Defense Highway System*. American Association of State Highway and Transportation Officials, Washington, D.C., 1991.
- Weingroff, R. F. "Federal-Aid Highway Act of 1956: Creating the Interstate System." *Public Roads* 96 (December 1996).