Celebrating the Golden Anniversary of the Interstate Highway System

By Tom Kuennen

Today's Interstate Highway System is the culmination of decades of on-again, off-again federal/state partnership

AASHTO PHOTO

Consistency where there was none was an early theme of Interstate highway promotion.

Its odd numbers run north and south. The even numbers run east and west.

For north and south routes, the lowest numbers are in the West. And for east and west routes, the lowest numbers are in the South.

It sprawls 46,572 miles over a web that connects each of the continental United States' metropolitan areas with its counterparts in neighboring states, and links the most remote places in our vast nation to the most crowded cities.

It connects Imperial Beach, Calif., in the far southwestern corner of the United States with Houlton, Maine, in the far northeast, and Blaine, Wash., in the far northwest with Miami in the far southeast. Thus it links Mexico to Canada to the Caribbean Sea, and all points in between.

It links city to city, suburb to city, suburb to suburb, farm to market, product to sale, manufacturer to port, warrior to embarkation point, and vacationer to dreamland.

And traffic and fuel supply willing, it does it without a single stop for the traveler.

It's our Dwight D. Eisenhower National System of Interstate and Defense Highways, and this year marks the 50th anniversary of its creation. And while only five decades have passed

since the enabling legislation was signed and the first dirt was turned, the story of the Interstate system is much older.

Many citizens know that the Interstate system is a "federal" system, and assume that the U.S. government built the Interstate system, just as it did the predecessor U.S. routes, such as the famous U.S. 66. But they're wrong.

Instead, those highways were built by an evolving, on-again, off-again partnership between the individual states and the federal government. The states built their highways using their own internal taxes, bolstered by federal funds collected from highway users at the gas pump.

Thus state departments of transportation (DOTs) are the builders and owners of the highways, but they can use federal funds collected at the gas pump if the highways meet – at the most basic level – the federal government's design criteria for geometrics and safety, along with other requirements.

Today we take for granted this partnership of federal and state governments to construct and maintain surface transportation infrastructure, but this partnership never was an accomplished fact. Instead, it developed over centuries of give-and-take, trust, and cooperation. Here's how it happened.

PHOTO COURTESY OF TOM KUENNEN

This Civil War-era turnpike road in New York State was built in 1862. By 1902 stone wheel tracks had been added.

Federal Role Never a Given

In the nation's colonial period, there simply were no roads as we know them. Dirt wagon paths and traces connected towns across the landscape, and in urban areas, streets were of mud redolent of horse manure. Freight transportation was almost entirely by water. The interior of the country was reached by river, and many of the cities in the interior along the rivers, like St. Louis and Pittsburgh, were founded in colonial times.

However, most of the rivers flowed north to south, yet much of the nation's commerce moved on an east-west axis. Moreover, the young United States government was determined to sustain commerce by operating a reliable, scheduled mail service. Crude roads were developed to meet this demand.

These roads always were dirt pathways through forests. If heavy materials – such as cannon and ammunition – had to be moved overland, "corduroy" roads were constructed of trees felled and laid side-to-side, on the spot, to keep equipment from sinking into the mud. Eventually, rain would float the logs and disrupt travel. Their successor, the "plank" road, was only marginally better.

From colonial days, roadbuilding always was a local or state undertaking. The first road law dates to 1632, when the General Assembly of Virginia passed a bill authorizing highways to be constructed. In 1639, the Massachusetts Bay Colony elaborated rights-of-way guidelines and simple construction specifications.

"Under colonial laws patterned after those of the mother country, roadmaking and mending were responsibilities of the local governments: the towns in New England, the counties in other colonies," wrote the Federal Highway Administration (FHWA) in its landmark bicentennial history, *America's Highways, 1776-1976*.

But money was scarce in those times, and governments had few resources to pay for roadbuilding. Much roadwork was provided as "statute labor," in which free, slave, or indentured men were obligated to work for a particular period on the roads, or pay a cash settlement.

The longest route in the Interstate system is I-90, from Seattle to Boston, 3,085.27 miles. The shortest route is I-97, Annapolis to Baltimore, 17.57 miles.

In particular, farmers were reluctant to pay taxes to build roads that would be used mostly by outsiders. Where roads were desired, instead of government-sustained roads, private- or public-owned toll roads were established. Tolls were supposed to be used to keep the road in repair, although in practice most roads remained wretched. The term "turnpike" comes from the rotating gates used to keep a traveler off the road until he had paid his toll.

Foremost among these was the Lancaster Pike, constructed in the 1790s. This 62-mile toll road connected Lancaster, Pa., with Philadelphia, and was specified to be 50 feet wide, with a 24-foot center section of wood, stone, gravel, or other hard, compacted surface.

"After 1800, most of the states adopted toll financing for main roads and canals, while retaining the old statute labor system for

When an Interstate hits a major urban area, beltways around the city carry a three-digit number. These routes are designated with the number of the main route and an even-numbered prefix. To prevent duplication within a state, prefixes go up. For example, if I-80 runs through three cities in a state, routes around those cities would be I-280, I-480, and I-680. This system is not carried across state lines, so several cities in different states can have a beltway called I-280.

local improvements," FHWA said. "The turnpike movement eventually spread into all the states, and by 1850 there were hundreds of companies operating thousands of miles of roads and canals."

The Feds Build an Interstate Road

Under President Thomas Jefferson, the United States acquired the Louisiana Purchase from France in 1803, and overnight doubled in size. Access to "Louisiana," as it was then called, was gained either through forest traces, by heading west along the Ohio River, or by taking a boat to New Orleans, then up the Mississippi to the Missouri River. A new, national road to the West was needed.

However, President Jefferson was elected on a platform of strong states' rights and a weak central government, and had to grapple with the dilemma of how the federal government would pay for highway building, specifically a national road to the West, while not trampling states' rights as provided in the U.S. Constitution.

Jefferson's treasury secretary, Albert Gallatin, hit on the solution when he suggested that 2 percent of income from the sale of public lands be set aside for construction of the National Road. This cut later was increased to 5 percent, and in 1806 Congress authorized the construction of a National Road between Cumberland, Md., and Wheeling, [West] Virginia. The right-of-way was to be a minimum of 66 feet wide with grades limited to 8.75 percent (compared to current Interstate geometrics of 7 percent). The finished driving lane was 20 feet wide and finished of compacted crushed stone and gravel, with drainage ditches on either side.

The National Road was extended to Columbus, Ohio, and plans called for it to reach Vandalia, Ill., and ultimately St. Louis, although that did not happen. After 1830 – following his veto that year of the Maysville Turnpike bill – President Andrew Jackson began to "turn back" the National Road to the states, which began to charge tolls.

ASPHALT INSTITUTE PHOTO

Pennsylvania Ave. in Washington, D.C., is paved with asphalt opposite the Old Post Office, c. 1900.

Jackson Limits Federal Involvement

The Maysville Turnpike veto was a defining moment in the federal-state partnership in roadbuilding, because it established that the federal government would not underwrite roadbuilding of a local character.

In an early example of the political influence affecting today's surface transportation legislation, in Kentucky, Sen. Henry Clay proposed a spur from the National Road that would bring traffic to the Bluegrass region, and not unsurprisingly, past the front door of Clay's plantation house.

The Kentucky legislature incorporated a road company, and Congress passed a bill compelling the federal government to capitalize the effort by subscribing to 1,500 shares. Jackson pocket-vetoed that bill, stating the road would be purely local in nature, not connect with any other improved area, and lie totally within the Commonwealth of Kentucky.

"If it be the wish of the people that the construction of roads and canals should be conducted by the Federal Government," Jackson wrote, "it is indispensibly necessary that a previous amendment to the Constitution, delegating the necessary power and defining and restricting its exercise with reference to the sovereignty of the States, should be made."

Thus a strong line was drawn between federal on one hand, and state and local road funding on the other. Although the federal government would continue to build military roads and provide grants to canals and railroads, that line would not be crossed until the Federal Aid Road Act of 1916, which launched the "federal" road system as we know it today. And no constitutional amendment was necessary.

About this time, former South Carolina Congressman Joel Roberts Poinsett spoke with famed French traveler Alexis de

All but five state capitals are served by the Interstate Highway System. Those not served are: Juneau, Alaska; Dover, Del.; Jefferson City, Mo.; Carson City, Nev.; and Pierre, S.D.

Tocqueville about America's roads, as de Tocqueville toured America in advance of his book, *Democracy in America* (1835).

"It's a great constitutional question whether Congress has the right to make anything but military roads," Poinsett told the Frenchman, as related in correspondence. "Personally, I am convinced that the right exists; there being disagreement, however, practically no use, one might say, is made of it.

"It's the States that often undertake to open and keep up the roads traversing them," Poinsett said. "Most frequently these roads are at the expense of the counties. In general our roads are in very bad repair. We haven't the central authority to force the counties to do their duty. The inspection, being local, is biased and slack. Individuals, it is true, have the right to sue the communities which do not suitably repair their roads; but no one wants to have a suit with the local authority.

"Only the turnpike roads are passable," he added. "The turnpike system of roads seems to me very good, but time is required for it to enter into the habits of the people. It must be made to compete with the free road system. If the turnpike is much better or shorter than the other, travelers will soon feel that its use is an economy."

"The result was that such internal improvements as the Maysville Road became prerogatives of the states," said William L. Richter in *Transportation in America* (1995). "[This] effectively stifled federal expenditures and helped keep the U.S. government in the black for most of the post-Civil War period."

The issue of whether the federal government could construct national or interstate roads finally was put to rest in January 1907, when in *Wilson v. Shaw*, the U.S. Supreme Court affirmed that the U.S. Congress had that right under the interstate commerce clause of the Constitution.

ASPHALT INSTITUTE PHOTO

A rural road is improved with asphalt prior to 1910. Note the steamrollers building up steam in the background.

Roads and Turnpikes Decline

The era of turnpikes, canals, and rivers flourished up to the 1850s, but the advent of the steam-powered railroad put an end to them. By the 1840s, the National Road had already enjoyed its peak, and after the Civil War it competed with the Baltimore & Ohio Railroad, which drove it into oblivion. In the 1920s, the National Road became U.S. 40, and was designated I-70 with the coming of the Interstate system.

In the 1850s it became clear to industrializing America that the railroad was going to provide faster, cheaper, more reliable, and more versatile transportation than either the canals or the turnpikes. Short line railroads – regional ventures connecting towns or navigable water – proliferated through that decade and then began to be hooked up to regional and national trunk lines. With the Iron Horse, there was no longer any need to travel by road.

Even as the Civil War (1860-1865) raged, the Transcontinental Railroad – encouraged by public land grants and federal loans – was constructed, and completed in 1869. "Within the next 20 years, four other transcontinental railroads were completed," said FHWA in *America's Highways*. "In 1887 alone, 12,878 miles of track were laid, and by 1900 there were 260,000 miles of railroad in the United States."

As the turnpikes failed, their infrastructure was assumed by local counties, which maintained them as best they could. "The years between 1850 and 1900 have been called 'the dark age of the rural road,'" FHWA wrote. "With significant exceptions, these

roads were unimproved, or at best, only ditched and graded, yet in the aggregate they represented a mighty public effort, particularly in the West, where population was sparse and the people poor."

Progressivism Revives Roads

This sorry state of affairs would begin to erode as Progressivism (the Progressive era) took hold in American culture and politics, and with it the Good Roads Movement.

"At the turn of the century, the United States entered a period historians have called the Progressive era, a time of widespread reform," reports the 1991 retrospective of the American Association of State Highway & Transportation Officials (AASHTO), *The States and the Interstate*. "One of the problems addressed was the abysmal road network."

While Mecklenburg County, N.C., instituted a property tax for road maintenance as early as 1879, the Good Roads Movement blossomed in the early 1890s as farmers realized that improved roads could be used as leverage against the hated railroads and their extortionate tariffs, and as weekend bicyclists from the cities – enjoying their new-found leisure time – found the country lanes they wanted to cruise more often than not were morasses of mud.

"Full-fledged bike tours, picnics and other activities became common," Richter wrote in *Transportation in America*. "As cyclists roamed the hinterlands, one salient fact came back to them: American roads were in serious disrepair. Ever since the Civil War, roads had been allowed to disintegrate as public concern turned to the railroads."

"The bicycle is the father of the good roads movement in this country," Horatio Earle, founder of the American Road & Transportation Builders Association, wrote in his book, *The Autobiography of "By Gum" Earle* (1929). Earle had been an executive with LAW, the League of American Wheelmen, which lobbied and leafleted intensively for better roads.

In October 1892, the Good Roads Movement was inaugurated in Chicago at a convocation called by Gen. Roy Stone, a man who would become a titan of American roadbuilding. The first meeting of the National League for Good Roads drew over 1,000 delegates. And at its second national meeting, in Washington, D.C., in January 1893, the National League advocated the formation of a National Highway Commission. Another forum was held in Chicago in 1893 during the World's Columbian Exposition.

The culmination of these efforts was the founding in 1893 of the U.S. Office of Road Inquiry – predecessor of today's FHWA – which would audit the states' road systems and discern needs.

And the National League for Good Roads was not the only effort. "By 1900, there were over 100 local good-roads associations, and six national bodies," Richter said.

One of those, the National Good Roads Association, aggressively solicited donations from the public, as well as from civic groups, automobile manufacturers, and road machinery makers. Under the leadership of Col. William Moore, the association developed the concept of the "Good Roads Train," which would travel the countryside, stopping at towns, extolling the benefits of improved roads, and sharing engineering expertise (today's road "Technology Transfer").

The enormity of the challenge was spelled out by Stone in his 1894 tome, *New Roads and Road Laws*. At the time, Stone was both vice president of the National League for Good Roads and U.S. Special Agent and Engineer for Road Inquiry, Department of Agriculture, where he headed the office.

"The task of transforming a million miles, or more, of bad roads into good ones, a task which involved the disruption of century old systems, the development of new lines of legislation in all the States of our Union, and, in many, even the changing of their constitutions, and which has threatened to require an expenditure running into billions, has commonly been deemed so vast and difficult as to be utterly hopeless; but it suddenly appears that the few good citizens who have had the courage to attempt it, here and there, have reason to be astonished at their own success," Stone said in 1894. "Not only have the ways and means been found without oppression to the taxpayer, but the actual cost of good road-making has been brought far below the early estimates."

Federal-State Partnership Today

The Good Roads Movement sparked public and corporate awareness of the benefits of improved and safer roads, and created what we now call the FHWA. Most important, it reignited the federal-state roadbuilding partnership, culminating in the Federal Aid Road Act of 1916 and, later, the Federal Aid Highway and Highway Revenue Acts of 1956, which enabled the Interstate system, the anniversary of which we mark this year.

But the roadbuilding partnership also could be rocky. A continuing irritant between the states and the federal government is the contentious donor/donee issue, which pits states that contribute more in federal transportation excise (fuel, tire) taxes than they get back, against states which receive more funding than they contribute.

One such donee state is Wyoming, which can't generate the state gas taxes it needs to keep its transcontinental Interstates in repair; Interstates used, for example, by trucks hauling produce from California to the East Coast, and which may not even stop in Wyoming to buy fuel.

The longest east-west route in the Interstate system is I-90, Seattle to Boston, 3,085.27 miles. The longest north-south route is Miami to Houlton, Maine, 1,892.76 miles.

Despite the fact that there is no reason to have a federal program unless some states that need them receive more funds than others – the donor/donee issue rises with each surface transportation reauthorization.

Funding Sanctions Endanger Partnership

Just as contentious are the highway funding "sanctions" imposed by Congress to force states to adhere to a laundry list of federal policies, even if the U.S. Constitution precludes federal legislation to enforce that policy.

For example, visitors from other countries are surprised to learn the U.S. federal government cannot legislate a national minimum drinking age for alcohol, nor a national speed limit, nor a national seat belt law. Instead, under the Constitution, this type of legislation is relegated to the states. But that doesn't stop the federal government from trying to impose its policies.

The oldest segment of the Interstate system predates the system. It's Grand Central Parkway in Queens, N.Y., opened in 1936, and later grafted onto the system as I-278.

In the case of the national minimum drinking age (21) and the national speed limit, Congress imposed sanctions in which after a period of noncompliance, 5 percent of highway funds for the first year, and 10 percent in following years, would be withheld from a noncompliant state.

Therefore, in the name of highway safety, noncompliant states would be denied funds that could be used to make highways safer. In 1987, states and local governments argued vigorously against the National Uniform 21 Minimum Drinking Age Act of 1984, but it was upheld by the U.S. Supreme Court.

Similarly the 55 mph national speed limit act imposed sanctions not only for states that did not pass 55 mph maximum speed limit laws; through a complex formula it penalized those states whose average highway speeds exceeded the limit by a certain percentage. That law was rolled back by Congress.

The model for today is compulsory seat belt use, in which national policy is to require seat belt use, but no funding sanctions are imposed for noncompliance. With the ball in the states' court, state seat belt laws and educational programs have caused seat belt use to skyrocket in recent years, and the program is deemed a success without sanctions on federal funding.

Games have been played with bread-and-butter funding as well. Until the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Congress would always obligate fewer highway funds for a fiscal year than either provided by the authorizing legislation or permitted by federal gas taxes collected at the pump.

As the end of the Interstate program approached in the late 1980s, annual grumbling led to outright rebellion, with many donor states demanding "devolution" of the federal program to the states. Congress responded with a "spend-down" of the accumulated "balance" in the Highway Trust Fund, and the tremendously higher funding levels for highways since ISTEA have quelled most of this grousing.

Now the federal-state partnership is going in a new direction, as the private sector is invited by the public sector to become more involved in highway design, construction, material certification, and pavement performance warranties. We'll discuss this trend later in *Interstate 50*.

It's just the latest permutation in the on-again, off-again federal/state partnership that has its roots in America's colonial era but made possible the Interstate highways.

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Public-Private Partnerships in the Interstate Age

By Harold Linnenkohl

The unparalleled mobility provided by the Dwight D. Eisenhower National System of Interstate and Defense Highways over the past 50 years has driven America's economic growth and world competitiveness. As we look ahead to the next 50 years, two challenges loom large: first, how to fund the preservation and modernization of the 47,000-mile system already in place, so it can continue to serve future generations; and second, in light of the dramatic growth in population and travel that has taken place and is expected to increase still further in the decades ahead, how to add the new capacity needed.

In fact, the future is already at hand as states strive to finance transportation projects in an era of financial constraints and rising prices. The "Highway, Bridges and Transit Conditions and Performance Report" released by the U.S. DOT in March 2006 shows that annual highway capital spending needs to ramp up from the $68.2 billion invested by federal, state, and local governments in 2004 to $118.9 billion to meet national needs. Until it does so, just to meet the backlog of Interstate preservation needs will require nearly all of the capital resources currently available.

Confronting the challenge of how to add the new capacity needed, states are seeking ways to supplement the traditional fuel-tax revenues that have long served as the primary transportation finance method. Public Private Partnerships financed through tolls have emerged as an option that engages the expertise and capital of the private sector.

The idea of public-private partnerships is not really a new concept in U.S. transportation thinking. In the late 1860s, the Transcontinental Railroad came into being through a partnership between the railroad industry and the federal government. Toll roads preceded free roads in the early days of the nation. But today's partnerships are now global, attracting private investment from around the world, as in the case of the Chicago Skyway. The City of Chicago entered into a $1.8 billion, 99-year lease with a private firm. The Spanish and Australian consortium running the concession is charging tolls on the Skyway to not only turn a profit, but maintain and upgrade the roadway.

Earlier this year, the state of Indiana signed an agreement to turn the 157-mile Indiana Toll Road over to a consortium that will operate it for the next 75 years. Under the lease, the Spanish-Australian consortium Cintra-Macquarie would pay the state $3.85 billion up front and be responsible for operating and maintaining the tollway.

Probably one of the most ambitious public-private partnership projects is taking place in Texas, where Lone Star State legislators understand that good transportation is vital to expanding their economy. The Trans-Texas Corridor 35 Project is planned to stretch more than 500 miles from Oklahoma, through Texas, and to the Mexican border. It will largely follow the route of the current Interstate 35, but will have lanes for vehicle travel, rail, and utilities, with a private firm operating the concession, collecting tolls for 50 years to pay for the project. The Spanish firm of Cintra has joined forces with the Texas contractor Zachary to fund an initial $7.2 billion portion of this corridor.

U.S. firms – such as United Infrastructure of Washington, building the Tacoma Narrows Bridge, and the Fluor Corporation, building HOT lanes in Virginia – also are actively engaged in public-private ventures, using private U.S. equity rather than state-backed bonds to finance facilities. Today, some 23 states have enacted legislation to allow the formation of public-private partnerships, and other states are examining whether this is a tool they should also consider. The Federal Highway Administration in November issued a manual to serve as a one-stop information resource. And an Internet search will yield you more than 59 million hits on PPPs.

So, as the nation and state transportation officials plan for the next 50 years of the Interstate Highway System, public-private partnerships are clearly among a variety of funding sources available to the nation to keep Americans moving.

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