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Virginia Department of Transportation

A HISTORY OF ROADS IN VIRGINIA

"THE MOST CONVENIENT WAYES"

SPECIAL CENTENNIAL EDITION

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Produced by the
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"THE MOST CONVENIENT WAYES"

Early colonists considered waterways to be the most important transportation links.

The Virginia settlers, who arrived at Jamestown Island aboard three small ships on May 13, 1607, had little need for a road system.

Barely more than 100 in number, their first concerns were disease, hunger, shelter, and protection from the often hostile Indians who had lived on the land for generations. In those first rigorous years, survival demanded the full energy of the colonists in the wilderness.

The waterways were there for transportation—the great rivers that emptied into the Chesapeake Bay and that were to become known as the James, the York, the Rappahannock, and the Potomac.

As the colonists hunted for food and cautiously began exploring the forest, they discovered a crude network of paths made long before by Indians and wild animals. The colonists used these, and many of the paths were to shape the Virginia road pattern for years to come.

The settlers also found roughly built bridges made of tree trunks and limbs, which they at first believed to be Indian-planted traps rather than bridges. By 1610, with new arrivals from England, the colony numbered 210.

The road along the River Bank, probably a former Indian path, was used to haul supplies from the ships to the Jamestown Fort.

The Greate Road appears to have been Jamestown's main street, and it was of early commercial importance. It crossed the isthmus connecting the island with the mainland at Glass House Point, where in 1608 glass was manufactured for export. Faint traces of the road are evident today at Glass House Point.

Eventually, the Greate Road extended on the mainland to Middle Plantation, a settlement to become known as Williamsburg and destined to be the capital of the Virginia colony and the hub of the colonial road system.

The first bridge recorded as having been built by the English settlers was constructed in 1611 at Jamestown Island. It wasn't really a bridge, but a wharf about 200 feet long from the bank of the James to the river channel, where the settlers docked their ships. The colony's first agricultural crops raised for export were rolled to these ships.

John Rolfe had begun experimenting with the cultivation of tobacco in 1612 and two years later exported a shipment to England. In less than 20 years, tobacco exports had reached 500,000 pounds annually; tobacco would remain the foundation for the Virginia economy throughout the colonial period.

Inevitably, the success of the tobacco crop was to influence the colony's transportation needs as well.

The tobacco fields spread on the mainland, and a number of the old Indian paths became tobacco rolling roads. The name came from the practice of packing the harvested tobacco in barrels called hogsheads and rolling them to the wharves, frequently a distance of miles. The rollers ordinarily tried to follow the high ground and avoid the fords, or shallow stream crossings, because water leaking through the barrels would damage the tobacco. The practice of following the old paths and branching off from time to time on higher ground accounts for many of the early meandering country roads.

After two decades, the colony's population was near 5,000 and growing. The frontier had been pushed well beyond its original boundaries, and while much of the settlers' travel was still by boat, an increasing proportion was on land.

AMERICA'S FIRST ROAD LAW

Much manual labor was the requirement for building and maintaining early roads.

The need for improving roads to better serve the social and economic life of the colony was among the matters facing members of the House of Burgesses as they met in Jamestown in September 1632.

Before adjournment, they had passed the first highway legislation in American history, an act providing, in the language of the day, that, *"Highwayes shall be layd in such convenient places as are requisite accordinge as the Gov. and Counsell or the commissioners for the monthlie corts shall appoynt, or accordinge as the parishioners of every parish shall agree."*

The first legislation also required each man in the colony to work on the roads a given number of days each year, a custom dating at least from the feudal period of the Middle Ages in England, or to pay another to work in his place. This labor law, to remain in effect for more than 250 years, provided the main source of workers for road and bridge construction.

Twenty-five years later, probably in March 1657, the colony's basic road law was broadened to provide *"that surveyors of highwaise and maintenance for bridges be yearly kept and appointed in each countie cort respectively…"*

In 1661, the surveyors were empowered to select locations for roads, choosing *"the most convenient wayes to Church, to the Court, to James Towne, and from County to County."*

By the end of the 17th century, many miles of primitive roads threaded throughout Tidewater Virginia. The colony's population had reached 70,000. While horseback

was the most frequent means of overland travel, horse-drawn carts became more numerous, and some carriages and coaches gradually appeared.

In 1705, the legislature passed a new road act providing for *"making, clearing, and repairing the highways and for clearing the rivers and creeks... for the more convenient traveling and carriage, by land, of tobaccos merchandise, or other things within this dominion… "*

The new road act provided for further extension of the road system and required that the roads *"be kept well cleared from woods and bushes, and the roots well grubbed up, at least thirty feet broad."* The new law also provided for skilled labor to erect bridges larger than could be built by the local surveyors, and when such a bridge was to cross a county line, its cost would be divided *"proportionable to the number of tithables in each county."*

Other road laws came quickly in the early years of the 18th century. Owners of mill dams were required to provide a 10-foot passage on dams and spillways; it became mandatory for a county in which an iron furnace was operated to provide *"good roads to be laid out and made from such works to the nearest place upon some navigable river or creek."* Establishment of public ferries was authorized by the legislature.

In 1716, Alexander Spotswood, regarded by many as perhaps the best of the colonial governors, led his "Knights of The Golden Horseshoe" up the summits of the "Great Mountains," the Blue Ridge, and looked down in amazement at the splendor of the Shenandoah Valley. Spotswood, a former soldier, recognized that settlement of the valley could help protect eastern Virginia from hostile forces.

It was in the next quarter-century that the valley and much of the Piedmont, the rolling country between the mountains and Tidewater, were settled by pioneers moving inland and by many others who came down into the valley from Pennsylvania and New Jersey.

Extending north and south through the valley was a relatively good Indian path, called by various names including the Appalachian Warriors' Path and the Shenandoah Hunting Path. By the mid-18th century, it had been developed into the Great Wagon Road, which eventually led from Pennsylvania southward through the valley and on to Georgia.

Toward the southern end of the valley, the Great Wagon Road separated into two branches near Big Lick, later to become Roanoke. While one branch left the valley and went due south, the other continued west and crossed Cumberland Gap through the Allegheny Mountains at what now is the junction of the Virginia, Kentucky, and Tennessee borders. After Daniel Boone and a band of frontiersmen cleared a path into Kentucky about 1775, the western branch became known as the Wilderness Road, and it was to become the main pioneer route along which traveled the first waves of the great migration to the West.

East of the mountains, two principal routes led from where Richmond stands today deep into the interior. One was a path to the settlements that were to become Lynchburg and Roanoke, a course now followed approximately by U.S. Routes 60 and 460. The other was the Three-Chopt Road or Three-Notched Road to Albemarle, where it connected with another path leading across the mountains at Afton and into the valley. Its name came from the way it was marked to guide travelers, with notches cut on the trees.

In his "Notes on the State of Virginia" in 1785, Thomas Jefferson described the approach to handling road matters. *"The roads are under the government of county courts, subject to be controlled by the general court. They order new roads to be opened wherever they think them necessary. The inhabitants of the county are by them laid off into precincts, to each of which they allot a convenient portion of the public roads to be kept in repair. Such bridges as may be built without the assistance of artificers (skilled workers or craftsmen), they are to build. If the stream be such as to require a bridge of regular workmanship, the county employs workmen to build it at the expense of the whole county. If it be too great for the county, application is made to the General Assembly, who authorizes individuals to build it and to take a fixed toll from all passengers, or gives sanction to such other propositions as to them appear reasonable. Ferries are admitted only at such places as are particularly pointed out by law, and the rates of ferriage are fixed."*

MAKING GUN CARRIAGES
at the RICHMOND ARMORY

TURNPIKE ERA

The ravages of Civil War campaigns left many of Virginia's roads in ruins.

Road building in the latter stages of the 18th century and much of the 19th century was marked by the development of many turnpikes or toll roads. As Jefferson observed, toll financing provided a means of building highway facilities for which there was a need but which were too complex and costly to be constructed by the counties alone.

For the most part, Virginia counties were impoverished and exhausted from their contributions of men, supplies, and other resources to the Revolutionary War. The turnpike era offered a new way of meeting road needs.

The turnpike got its name from its toll gate. When first designed, the gate was a turnstile consisting of two crossed bars pointed at their outer ends and turned on a vertical bar or pole.

In 1772, the Virginia legislature cleared the way for what probably was the first toll road in America, when it authorized Augusta County to build a highway over the mountain between Jenning's Gap and Warm Springs and to establish a toll gate. The road, as outlined by the legislature, was to be financed with 300 pounds advanced by the colony and 900 pounds raised by a lottery. Revenue collected from travelers was to be spent for the upkeep of the road and *"towards building... housing for the reception of the poor sick resorting to the said springs."*

In 1785, five years after Richmond had become the state's capital, the legislature appointed a commission to erect toll gates on existing roads in the Alexandria area to increase road revenue. The Fairfax and Loudoun Turnpike Road Company was chartered in 1795 to construct an improved road between Alexandria and Little River in Fairfax County. It accomplished little, however, and was followed in 1802

by the Little River Turnpike Company which, in 1811, completed a 20-foot- wide turnpike extending west from Alexandria for about 34 miles. It operated as a toll road for nearly a century, and its completion touched off construction of many turnpikes in Virginia by the time of the Civil War.

Virginia's population by 1800 had climbed to 880,200, with settlers in most of the major regions that make up the present state. This growth and expansion led the General Assembly in February 1816 to establish the nation's first state board of public works and to create a fund for internal improvement. The board, with the governor serving as president, was empowered to appoint a "principal engineer" for the state, and it existed until 1902. Its formation coincided with the beginning of the nation's canal era.

The board was responsible for chartering, finding, and supervising internal improvements. The fund, amounting to more than a million dollars, was created to transfer shares, owned by the state, in the stock of the Little River Turnpike Company, the Dismal Swamp, Appomattox, Potomac, and James River Canal companies and in two banks. Money in the fund was to be used to match private capital in financing improvements.

The office of the principal engineer provided important resources for the location, design, and construction of transportation facilities in Virginia for years to come. The first principal engineer, Laommi Baldwin Jr., held office from 1816 until 1818, when he resigned. Baldwin was succeeded by Thomas Moore, who served until his death in 1822. Moore then was followed by Claudius Crozet, an engineer who was to have deep influence on Virginia transportation.

Crozet had been a French artillery officer under Napoleon Bonaparte before coming to America. He also had been a distinguished teacher at the United States Military Academy at West Point.

In Virginia, he served two terms as principal engineer, 1823-31 and 1838-43. The break in his service reflects the continuing dilemma of those faced with the responsibility for applying the results of a rapidly changing technology to large-scale public works. One of the major efforts supported by the board of public works was the James River and Kanawha Canal, which was intended to improve communication and trade between the populous and politically powerful eastern Virginia and the comparatively isolated western regions of the state. Development of the canal had started in 1785, but it had not advanced as rapidly as its promoters had hoped.

A new and serious obstacle to its success appeared in 1829, when the Stourbridge Lion, an early locomotive, was imported to the United States from England. A year later, Crozet suggested that in view of this exciting new invention, a steam railroad would be preferable to the canal to link east and west. It was a bold idea indeed, because until then no railroad using steam locomotives had been operated in this country. Moreover, it was a controversial idea; powerful forces in the state wanted completion of the canal.

Largely as an outgrowth of the controversy, the board of public works was reorganized by the legislature in 1831 with a requirement for annual legislative approval of the principal engineer. In addition, Crozet's salary was reduced from $3,500 to $2,500. Crozet resigned and spent the next six years in Louisiana.

Crozet returned to his former position in Virginia at the beginning of 1838, and although his position favoring railroads over canals ultimately proved correct, the controversy remained. It ended in 1843 with an act stating *"that the office of chief engineer of the state be and the same is hereby abolished."*

Shortly afterwards, Crozet became principal of Richmond Academy in downtown Richmond, but in 1849 he responded to the pleas of his former opponents and returned to engineering to direct construction of a rail road through the mountains. The community of Crozet in Albemarle County is named for him.

During calmer days as state engineer, Crozet also was responsible for building highways through the mountains, as well as in other regions. One of the principal roads was the Northwestern Turnpike, which emerged in 1827 as Virginia's bid for the profitable trade of the territory northwest of the Ohio River.

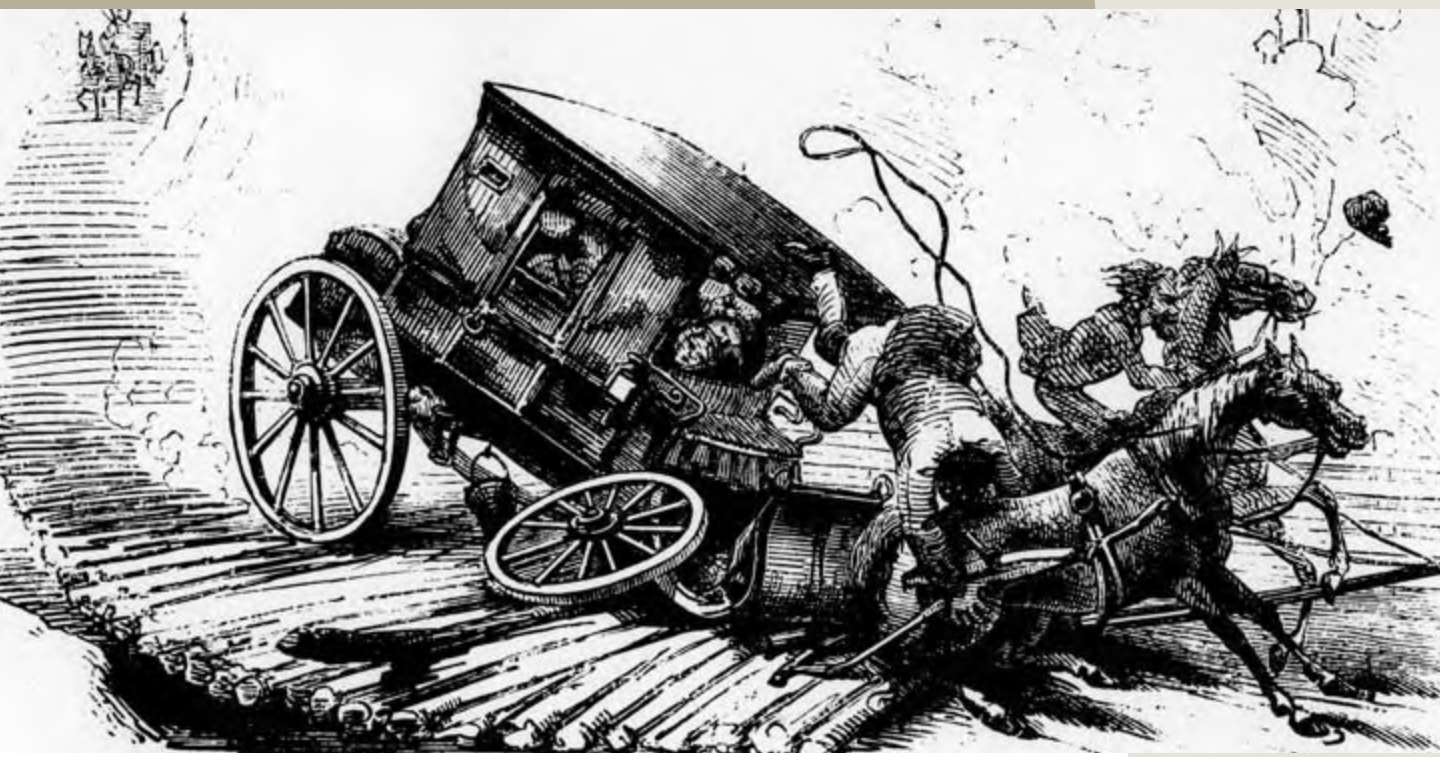
Legislation incorporating the turnpike authorized subscriptions from the townspeople of Winchester, where the road was to begin, and of the other communities along the way. But its authors chose a route to serve the most populous towns without much regard for the difficult terrain. Little progress was made.

In 1831, the legislature provided for a company, with the governor as president of its board of directors, to borrow money and construct the turnpike with a minimum width of 12 feet *"from Winchester to some point on the Ohio River to be situated by the principal engineer."*

The turnpike eventually reached the Ohio River, and its gentle grades and alignment, developed largely under Crozet's direction, made it one of the good roads of its day. The course it followed is largely that used today by U.S. Route 50.

The Valley Turnpike was another important 19th century road developed during this period. Incorporated in 1834, the Valley Turnpike Company was authorized by the legislature to improve the route between Winchester and Harrisonburg — part of the ancient Indian Warriors' Path and the Great Wagon Road followed by the early pioneers. The improvements were financed largely with $25 shares sold to private citizens and were completed in 1840.

EARLY PAVING METHODS



Plank roads were introduced from Canada in the 19th century, sometimes with jarring results.

While most roads remained dirt and in miserable condition, the turnpikes, relying on income from travelers for their existence, were provided in most instances with gravel, broken stone, wood, or macadam surfaces.

The old Manchester Pike near Richmond had been surfaced with gravel in 1808 and was recognized as the first "artificial" or paved road in the state. The widely used macadam surface was named after its developer, John Loudon McAdam, a Scottish-born engineer who began building roads in England in the early 19th century. McAdam is credited as the first to recognize that dry soil itself generally would support the weight of traffic and that pavement was necessary only to provide a smooth riding surface and to ensure dryness.

The macadam pavement consisted of crushed rock packed tightly into thin layers, with a top surface of sand or finely crushed stone rolled to provide a well-bound surface resistant to the penetrating damage of rain, ice and snow. McAdam generally specified a uniform thickness of seven to 10 inches for the finished road, although some ranged at least to 18 inches in thickness.

The specifications for one macadam road provided for the first layer of stone to be *"cast on with a shovel to a depth of six inches, after the manner of sowing grain."* It was to be compacted with a cast-iron roller, *"prepared with a box, or a cart bed, to carry two or three tons of sand"* and rolled until *"sufficiently solid and compact to receive the second layer."* After dressing the surface *"with a rake or otherwise,"* the second layer, three or four inches thick was to be *"put on, rolled, and prepared in all respects as the first stratum was, until in a state of firmness and solidity, proper to admit the third or last stratum, which can then be put on, and the surface*

raked and dressed to such shape and form as may be required, and also rolled until satisfactorily compacted."

Part of the Lynchburg-Salem Turnpike was the first segment of road to be macadamized in Virginia. The Valley Turnpike and the Southwestern Turnpike, between Salem and Seven Mile Fork near Marion, were others.

Wooden pavements were also used widely in the turnpike era, perhaps naturally, since standing timber was abundant over much of the state.

"Corduroy" roads were built by placing small logs side by side along a cleared path and covering them with dirt for smoothness. The "plank" road was introduced in the United States from Canada, where some 500 miles were laid between 1834 and 1850. A typical plank road had a single track about eight feet wide, with the planks placed crosswise. Later, they were inclined slightly to allow rainwater to drain.

By the mid-19th century, the railroads Crozet had favored were handling much of the long-distance movement of passengers and freight. This posed a new problem for the turnpikes, many of them already financially troubled. The railroads gained such great popularity that apathy developed toward road improvements. For the turnpikes, it meant reduced use and revenue. For other roads, it meant that many remained little more than dirt paths, impassable after heavy rains or during winter thaws and raising choking clouds of dust at other times.

With the outbreak of the Civil War in 1861, roads and railroads became immensely important to both Confederate and Union armies. The transportation arteries often governed the outcome of battles. The armies fought over them, guarded them, rebuilt them and constructed new ones. Food, clothing, medical supplies, guns, ammunition, and men moved by road and by rail.

In September 1861, Gen. Robert E. Lee, writing from a mountain encampment to Gov. John Letcher, said, *"Our greatest difficulty is the roads. It has been raining in these mountains about six weeks. It is impossible to get along. It is that which has paralyzed all our efforts."*

Two years later, then commander of the Army of Northern Virginia, Lee wrote, *"It has been raining a great deal… making the roads horrid and embarrassing our operations."* Some wagons simply broke down on the road from the mud and rocks. Other military commanders on both sides could tell similar stories of how road conditions often hindered their operations.

Poor to begin with, the roads and bridges were damaged and destroyed as the armies fought over them repeatedly. The company that operated the Valley Turnpike reported that its revenue collections were negligible because "of the army destroying bridges, injuring toll houses, and we are getting very little tolls."

For most of the turnpike companies, the war was the final blow from which they could not recover, and many passed from private to county ownership. Toll collections on most of the turnpikes never had been enough to pay operating and maintenance costs or to do much toward retiring the indebtedness, and the extensive but financially weak turnpike era was nearing an end.

A few toll facilities, the Little River and Valley turnpikes among them, somehow managed to recover sufficiently from the rages of war to remain in operation into the early 20th century. But a constitutional amendment in 1874 decreed that the state government could no longer invest in turnpike company stock. The risk was too great.

After the war, the state's board of public works turned mainly to matters other than roads, and in the counties there developed a widely varying patchwork of road development practices. Twenty-five years after the war, Virginia's roads were far worse than when the war began.

This was true despite the fact that, in the Reconstruction period, the General Assembly enacted much road legislation. The problem was that much of it was confusing and meaningless, and sometimes humorous. One law made it illegal to drive or lead a bear on a public highway, and another set a fine of $5 for a pedestrian who crossed a bridge at a pace greater than a walk.

A series of events late in the 19th century and early in the 20th century, however, were about to revolutionize man's mode of travel.

AUTO AGE BEGINS

Pulling autos out of the mud was a sideline business for many Virginia farmers.

In Springfield, Mass., in September 1893, what generally is accepted as the first American gasoline-powered automobile was given a short road test by its builders, brothers Charles E. and J. Frank Duryea.

That same year in Washington, the Congress established the United States Office of Road Inquiry, directing the Secretary of Agriculture *"to make inquiries in regard to the system of road management throughout the United States,"* to investigate methods of road building and to assist in disseminating information about the nation's roads.

Good roads societies were organized in many states, and in Virginia this movement dates at least to 1894. It was then that the Young Business Men's League of Roanoke took leadership in forming the Virginia Good Road Association. Local meetings and statewide conventions were held, and enthusiasm grew swiftly.

In September 1895, the Duryea brothers established the first American company to manufacture gasoline driven cars, the Duryea Motor Wagon Company. In 1904 the Ford Motor Company produced 1,695 cars, and by 1907 had increased its production to 14,887.

The last decade of the 19th century was called the Gay '90s, and the daring new mobility was a part of the mood. What is believed to have been the first automobile of any kind operated in Virginia was driven along Norfolk streets in 1899, powered by kerosene. Eleven years before that significant event, the world's first commercially successful streetcar system had begun in Richmond. The state's population had grown to 1,854,184, and while the population was about 85 percent rural, Richmond could count 85,000 residents.

Throughout Virginia, as throughout the nation, the public's delight with the automobile was mounting by leaps and bounds. But in most places, the roads weren't ready for this "horseless carriage."

GETTING ORGANIZED FOR BETTER ROADS

An early Virginia roadway crew stops work to pose for a photograph.

Two governors in this period gave strong support to the mushrooming good roads movement. They were Andrew Jackson Montague, the state's chief executive from 1902 to 1906, and his successor, Claude A. Swanson, who served until 1910. Their recommendations to the General Assembly in 1906 helped set the state government's course in road development for the years ahead.

Meeting in Richmond, the legislature created the first State Highway Commission, giving final approval to the legislation on March 6, 1906. A state highway commissioner was appointed by the governor with General Assembly confirmation. Legislation required that the commissioner be a Virginia citizen, as well as a *"civil engineer and a person well-versed in road-building."*

Legislation also dictated that the commission was to include three professors of civil engineering, one each from the University of Virginia (U.Va.), Virginia Military Institute (VMI), and what was then Virginia Agricultural and Mechanical College and Polytechnic Institute at Blacksburg. These commission members were chosen by the boards of visitors at the respective institutions.

Gov. Swanson appointed Philip St. Julien Wilson, a Powhatan County native and a civil engineering graduate in the class of 1886 at VMI, as the first commissioner. Wilson was 38 and serving as assistant city engineer for Richmond at the time of his appointment.

Joining Wilson on the first commission were William M. Thornton, dean of the engineering department at U.Va.; Col. T. A. Jones, civil engineering professor at VMI; and Col. R. A. Marr, dean of engineering at Virginia Agricultural and Mechanical College and Polytechnic Institute.

The law specified that the commissioner *"shall have a general supervision of the construction and repair of the main traveled roads in the state; the Commissioner may recommend to the local road authorities of any county, and to the Governor, needed improvements in the public roads; he shall supply technical information on road building to any citizen or officer in the state, and from time to time publish for public use such information as will be generally useful for road improvement."*

While the counties kept the responsibility for actually making the improvements, they now had a new state agency to which they could turn for help. For example, they could apply to the commissioner for civil engineering advice, and if he concluded that a proposed project would be permanent and on a main road and that it was practical, his office would prepare detailed plans and specifications and, at the county's expense, assign a civil engineer to supervise construction.

The 1906 legislature also established the state convict road force as a source of labor. *"All prisoners convicted of a crime and sentenced to either hard labor on the public roads or to imprisonment in jail and all persons imprisoned in jail for the non-payment of fine and costs, shall, when delivered upon order of the superintendent of the penitentiary for such purpose, constitute the state convict road force,"* the statute read.

For some years before, convict labor had been available to the counties for road work, but not more than half of the counties used it. After the 1906 legislation, the convict labor was channeled to roads that would benefit the whole state.

The commissioner also encouraged county officials to look beyond their own borders to the importance of working toward a coordinated, statewide highway system because still, to the frustration of early motorists, an improved road in one county might shrink to a rutted trail or disappear entirely in another. Boat or train remained the most certain means of traveling long distances in reasonable comfort.

In the commission's first annual report to the governor and General Assembly in October 1907, Wilson shed light on the first year's operation:

"This department being newly established some time was necessarily required for organization and preparation for carrying out the provisions of the law to the best advantage," he wrote. *"Efforts along this line proved that men in the state who were familiar with the work of permanent road improvement were difficult to secure. Competent engineers and foremen are obtainable, but comparatively few with any experience in modern highway construction, and without the services of such men road work cannot be carried on to the best advantage."*

Moreover, he added, *"Much preliminary work had to be done by the county authorities before they were actually ready to begin work. The problem of raising the necessary funds to defray the counties' portion of the expense was, in most instances, a difficult one, and met with many obstacles and delays. The machinery and equipment furnished by the counties has been, in several instances, very inadequate for the proper handling of the work."*

For some months, he wrote, *"great difficulty was experienced in securing prisoners from jails for service in the state convict road force, and the number of convicts in the state penitentiary who, under the law, were available for road work was very limited.*

As a consequence, the organization of the first force was not completed until October 1906, and it was not until well on in December 1906, that we were able to put to work as many as five forces of about 50 men each."

Wilson observed that while criticism had been voiced in several quarters *"about the undesirability, even inhumanity, of using convict labor on public works, all of which may have been justified,"* the fact was that *"the men in the road camps seem satisfied, and many have expressed to me a preference for this work to remaining in jail."*

The commissioner, after barely more than a year on the job and engaged in what had become largely a mission of public education, also commented on the inadequacy of funds available for road maintenance. It was a problem that had plagued the turnpikes a century before, and it would continue for another decade.

"This is a matter of the greatest importance, as even the best constructed roads require frequent, though not expensive, attention to keep them in good condition and to prevent the extensive and costly repairs that the lack of such attention will necessitate," he wrote. *"I would suggest than an amendment to the law be made to the effect that state aid will be extended to the construction of a road only upon condition that the county applying for such aid agree to make suitable provision for the up-keep of the improved road."*

The first improvement project completed with the help of the commission was the road between Williamsburg and Jamestown Island. Most of the road was surfaced with gravel and a mixture of sand and clay; about two miles were macadamized.

The General Assembly in 1906 had appropriated $16,000 to support the fledgling road program for the period from July 1, 1906, when the legislation became effective, to Feb. 28, 1908. It was to pay the salaries of the small staff—the commissioner, his assistant, a bridge engineer, a draftsman, a clerk, and a stenographer—and to furnish the offices and to purchase supplies.

FIRST CONSTRUCTION APPROPRIATION IN 1909

An Erie steam shovel is pictured in operation along with mule-drawn dump wagons.

By 1908, the need for better roads had reached the point that the legislature made its first appropriation for construction purposes under the new state program—$25,000 annually, beginning March 1, 1909, *"out of any money in the state treasury not otherwise appropriated."* It was intended mainly for use in counties where convict labor was not available and was to be matched equally by the counties paying for road improvements.

"This law does more than provide a very considerable additional fund for road improvement, as its requirement that a county shall raise an amount equal to its share of the fund before it can be obtained arouses the people to the importance of making extra efforts to provide money for improving the roads," Wilson said.

During this period, state law directed the counties to levy a road tax of up to 40 cents for each $100 in value on real estate and personal property, with the revenue to cover the counties' share of improvements and to buy road equipment. In addition, the counties were authorized to issue bonds *"for the purpose of macadamizing or otherwise permanently improving the public roads… or building bridges… "*

By 1910, Virginians owned 2,705 motor vehicles, and the General Assembly decided the time had come to regulate their use. That year, the state's first registration and licensing of motor vehicles was required, with registration fees of $5 for autos of 20 horsepower or less, $10 for those with 20 to 45 horsepower, and $20 for vehicles with more than 45 horsepower. A $2 registration fee was set for motorcycles and 235 were registered in 1910. The fees were to be paid into the state treasury as a special fund to be spent for improving main roads. Total revenue from the first year's collections amounted to $21,656.

In 1910, the General Assembly also enacted the first controls on motor vehicle speeds in Virginia. Twenty miles an hour was the established limit in open country, while eight miles an hour was established in towns, around curves, and at key intersections.

Three years later, with more than 10,000 motor vehicles in the state and the road program continuing to grow, Commissioner Wilson left Virginia to become chief engineer for the U.S. Office of Public Roads and Rural Engineering in Washington, an agency that had followed the Office of Road Inquiry. Wilson was succeeded by George P. Coleman, who had been his assistant since 1906.

Even as the changeover in administration was occurring, Wilson again cited the nagging problem of inadequate road maintenance:

"The expenditure of considerable amounts of money derived from long-term bonds by the various counties in the state for the construction of roads, and the evident lack of care of these roads after they have been constructed, demonstrates that unless some more adequate means for the maintenance of these roads is provided than has yet been provided by the several counties in which they have been constructed, there will come a time when the counties have little left but the debt which they have incurred," Wilson said.

Wilson also stressed that unless stringent maintenance requirements were imposed, *"the expenditures made and the work of this department during the past seven years will have been as naught."*

By that time, the counties had issued approximately $7 million in bonds. George Coleman agreed with his predecessor that this investment wasn't being protected. Increasing use of roads made the problem even more urgent. By 1916, more than 37,000 motor vehicles were registered in the state. It would be a pivotal year for the road program in Virginia and nationally.

In Richmond, the General Assembly passed an automobile maintenance law providing that income from vehicle license fees be placed in a special maintenance fund to be administered by the commission, in cooperation with county authorities and with expenditures to be matched equally by the counties.

The legislature also began curing the headache of the state's disjointed roads, some of which were smooth and hard-surfaced in one county and rutted dirt in the next. A study committee — consisting of three members of the state Senate, four from the House of Delegates, and the highway commissioner — was appointed to develop a plan for a state highway system to include the main roads between population centers.

In Washington, meanwhile, increasing attention was being focused on the problems of improving roads that connected various states. Coleman had been a chief organizer of the American Association of State Highway Officials (later became AASHTO) in 1914. The group was formed by highway administrators in the states to provide a forum for discussion of technical, legislative, and economic matters and to strengthen the state-federal relationship on roads.

One of the association's first moves was to designate a committee to prepare proposed legislation for the Congress authorizing federal participation in construction of highways and encouraging better state-to-state coordination. Coleman was chairman of that legislation drafting committee.

The committee's proposals were submitted to Congress in 1916 and were approved that year largely as presented. The new law provided for construction of rural public roads and defined them as *"any public road over which the United States mails now are or may hereafter be transported."* Federal funds were not to exceed 50 percent of the cost of constructing improvements, and the states were to have the responsibility for maintaining the completed facilities.

President Woodrow Wilson signed the Federal Aid Road Act on July 11, 1916. It was the federal government's first comprehensive law aimed at establishing a nationwide highway system. When it was passed, America had 2,578,078 miles of public roads, 294,569 miles or 11.4 percent of which were surfaced.

For the 1916-17 fiscal year, Virginia received approximately $100,000 in federal funds. The road between Hansonville and the Washington-Russell County line at Moccasin Gap, now U.S. Route 19, was the first road in the state to be improved with federal aid.

STATE SYSTEM APPROVED; WWI INTERRUPTS PROGRESS

Route 1 near Dumfries as it appeared (from left) in 1919, the early 1930s, 1989 and 2006.

During its 1918 session in Richmond, the General Assembly approved establishment of the first state highway system, a network of 4,002 miles for which construction and maintenance would be the direct responsibility of the highway commissioner and his staff.

Among the roads to be included was the old Valley Turnpike between Winchester and Staunton, which still was being operated as a toll road in 1918. As late as 1926, it remained the only hard-surfaced road of much distance.

The so-called Richmond-Washington Highway, the often muddy predecessor of U.S. Route 1 and Interstate 95, also was included in the system. At the time, it was gravel and soil except for a short section of concrete south of Alexandria and a short macadamized segment north of Richmond. As on many roads, cars frequently had to be pulled by other vehicles or by horses through swamp-like areas in rainy weather and in winter thaws. A fully paved Route 1 was not completed until 1927.

In 1918, the legislature also continued the convict road force, but limited its use to the new state system. In 1922, a law authorized the commission to expand the system each year by an amount of mileage equal to $2^1/_2$ percent of the original system. Subsequent additions also were made by other legislative action.

In an extra session in 1919, the General Assembly made a significant change in commission organization. It was expanded from four to five members, who were to be appointed by the governor with the advice and consent of the Senate. More importantly, members were to be private citizens chosen to represent major geographic regions of the state. In addition, the governor was to appoint the commissioner, who would administer day-to-day operations.

Virginia's road development was about to be interrupted, however, by circumstances far beyond the state's borders with the outbreak of World War I. Coleman spoke of it this way:

"The year opened up with orders from the federal government restricting the use of all cars and the practical confiscation of road materials for war purposes. The declaration of war by this country was followed immediately by a serious labor shortage and a consequent increase in the cost of labor and materials. These restrictions and increased costs were largely on such road materials as steel, cement, stone, gravel, sand, bitumens, and so forth… Approximately 80 percent of the engineers and specially trained men of the department entered the service of their country… We are making every effort to meet this condition with the funds at hand."

The state's population had exceeded 2.3 million and more than 145,000 motor vehicles were registered.

FINANCING THE ROADS

Wet subgrade is removed in an Amherst County project.

After the war, the road development program regained momentum and sought to keep up with the growing popularity of the auto. More than 25,000 vehicles would be added to the state's roads in a year's time. Inevitably, questions persisted about how to raise additional highway revenue to meet the mounting needs.

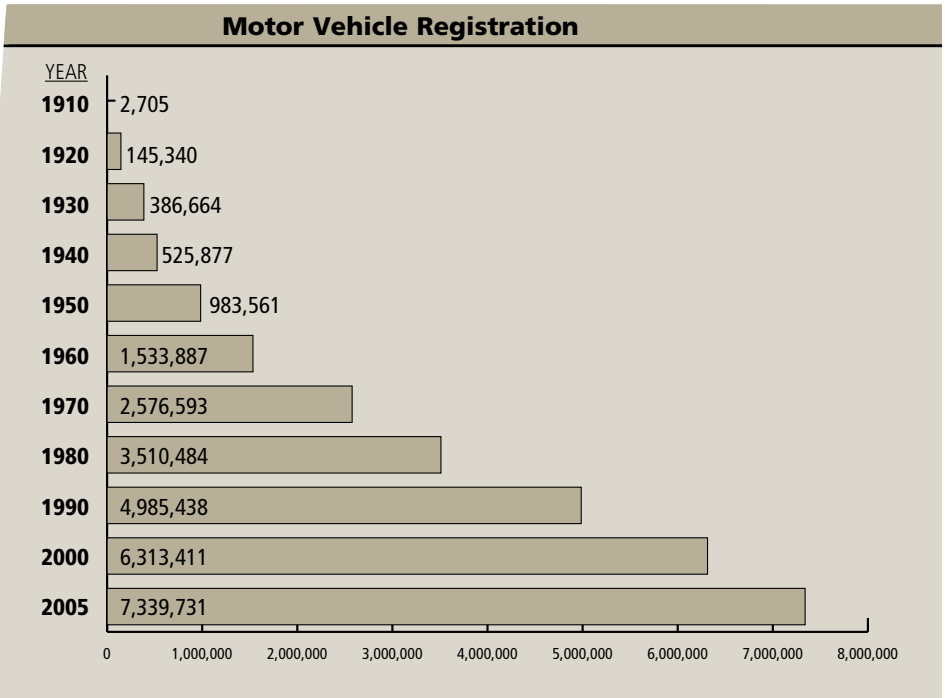
The state Constitution of 1869 had prohibited any state debt except to meet casual deficits in the revenue, to redeem previous liabilities, or to protect the state in the event of insurrection or war. The same restriction remained in a revised Constitution of 1902, but a later amendment, pushed by the Good Roads Association and approved by 61,000 votes in a 1920 referendum, had permitted the legislature to issue bonds to build or repair roads. Statewide political debate developed about using that permissive borrowing power, however.

State Sen. Harry F. Byrd Sr. of Winchester, chairman of the Virginia Senate Roads Committee, opposed bonds and urged the levying of a tax of three cents on a gallon of gasoline to produce the revenue. Early in 1923, Gov. E. Lee Trinkle called an extra "roads" session of the General Assembly to decide a course of action. He recommended a temporary "pay-as-you-go" policy until the question of bonds could be considered again by the voters in a referendum.

The legislature approved the Byrd gasoline proposal and ordered that a suggested $50 million bond issue be submitted to referendum in November.

By a margin of some 46,000 votes, the citizens this time rejected the bond issue idea in what was considered in many ways a victory for rural voters. Only 19 counties voted for the bond issue, while it won approval in 17 of the state's cities. The gasoline tax was destined to become the largest single source of revenue for

road building and maintenance and was to be increased gradually over the years. At the national level, a gasoline tax approved by Congress was to become the principal revenue source for the federally aided road program as well.



During the debate about financing, Virginia's highway organization continued to be refined. In 1922, the legislature directed that the state be divided geographically into eight highway districts and that available funds be distributed among them in equal shares.

Other organizational changes in the commission led to the appointment of Henry G. Shirley, who had been Maryland's highway administrator, as chairman. Coleman stayed as highway commissioner until his resignation in 1923, and later the positions of chairman and commissioner were combined.

In 1927, as part of a reorganization of state government, the Department of Highways was formally established as a state agency, although the commission staff had been called the "highway department" since the outset.

As disconnected sections of improved roads were linked into continuous long- distance routes crossing many states, travelers found themselves steadily more bewildered by a confusing array of directional and informational signs. There was little continuity or standardization from state to state, and it was easy for motorists to get lost in unfamiliar territory.

At the request of the American Association of State Highway Officials, the U.S. secretary of agriculture appointed a committee in March 1925 *"to undertake immediately the selection and designation of a comprehensive and uniform scheme for designating such routes in such manner as to give them a conspicuous place among the highways of the country as roads of inter-state and national significance."*

It was this move that led to the beginning of route numbers and to uniform signs for the convenience of motorists throughout the nation, and that produced

greater continuity in marking Virginia's roads. The basic plan provided generally for assigning even numbers to east-west routes and odd numbers to north-south roads.

By 1930, a total of 386,664 motor vehicles were registered in the state. The license tax produced $6,564,000 in revenue, and the gasoline tax produced $7,251,000. The state highway system had been increased to 7,191 miles.

The counties, however, still were plagued by problems of improving and maintaining the local roads for which they were responsible. Most of those roads remained in extremely poor condition. Few counties had engineers on their staffs, and not many had the necessary equipment.

And yet about two-thirds of the state's workers earned their livelihoods from the land and faced the continuing need of hauling farm products to market. The Depression that swept the nation brought more serious problems, and most rural Virginians had little money to pay the property taxes that had continued as the main source of income for the county roads.

In Richmond and in the district highway offices that had been established around the state, adjustments were made in road operations to aid as many families as possible during the economic crisis of the Depression years.

During the fall of 1931, the commission found that under normal work schedules it could provide employment and wages for only a few additional workers. But a "stagger system," providing jobs for one force of men one week and another force the next week and continuing the procedure through the construction season, made jobs and income available for 8,000 additional workers. The commission kept this system in effect throughout the Depression.

THE SECONDARY SYSTEM

Highways and road signs were vastly improved by the 1930s.

It was against this background that the General Assembly in 1932 approved a means by which the counties could be relieved of road construction and maintenance responsibility. The "Byrd Road Act" inspired by the former Winchester senator who two years before had completed a term as governor, authorized the establishment of the state "secondary" road system. It permitted each county, if it wished, to give its road responsibility to the Highway Commission. One economist estimated that this action would reduce rural taxes by $2,895,102 annually.

Four counties - Arlington, Henrico, Nottoway and Warwick - chose to keep the responsibility; the other counties joined the new secondary system. In 1933, Nottoway reversed its earlier decision and joined the system. Years later, Warwick gave up its county status to become a city that eventually merged with Newport News. Arlington and Henrico counties continued to operate their own local roads.

When the secondary system was established, it totaled 35,900 miles. It included 2,000 miles hard-surfaced, 8,900 miles with soil or gravel surfaces, and more than 25,000 miles, or almost 70 percent, of largely unimproved dirt roads. Some counties had no hard-surfaced roads at all.

Within a decade, the amount of hard-surfaced roads had tripled, the mileage of soil or gravel roads had doubled, and the unimproved roads had been reduced by almost half.

With the arrival of the secondary system, the main roads for which the state had been responsible became known as the "primary" highway system.

In August 1939, with motor vehicle registration approaching a half million, Commissioner Henry Shirley reported that *"The demand for a road that can be*

used throughout the year is becoming greater and greater, and such a road has become a necessity. Practically all horse-drawn equipment has vanished from the highways, and motor equipment taken its place, requiring a road that can be traveled the year-round." A year later, Shirley reported another development that was to become a major part of road operations in Virginia and elsewhere. *"All the main highways are being marked with traffic lines, and the system adopted we hope will be the means of saving many lives. Under no condition should a vehicle cross a solid line when it is next to the vehicle, or two solid lines,"* he said.

Despite the precautions, however, safety problems continued to trouble highway engineers as the number of autos grew.

Brig. Gen. James A. Anderson, who had taught civil engineering and been dean of the faculty at VMI, was on furlough from the academic world and was serving as coordinator of the State Defense Council at the time of Shirley's death in July 1941. Anderson was appointed highway commissioner, a position he held until his retirement in 1957.

Virginia's Highway System Mileage

Year	Interstate	Primary	Secondary	Urban	Total
1918*		4,002			4,002
1930		7,191			7,191
1940		9,404	37,660	228	47,292
1950		8,643	39,189	2,527	50,359
1960	154	7,926	41,823	4,337	54,240
1970	825	7,781	42,303	6,954	57,863
1980	1,019	7,895	43,851	8,166	60,931
2000	1,118	8,012	47,247	10,224	66,601
2006	1,118	8,074	49,993	10,491	69,676

*****_The first state highway system was established in 1918._

"Accidents on the highways are increasing daily, and every care and precaution within the power of the commission is being taken to reduce this heavy toll of life," Anderson said shortly after his appointment. *"It is imperative that something be done to reduce the speed of automobiles on the highways, and to educate the drivers to the courtesy of the road."*

ANOTHER WORLD WAR BEGINS

The Highway Building in Richmond was dedicated in 1939. The entablature across the Neo-Greek style building reads, *"Dedicated to the comfort and safety of those who travel the highways of the Commonwealth of Virginia."*

Within months, the thoughts of Virginians and other citizens throughout the land were to be diverted by the entry of the United States into World War II.

"The war emergency has multiplied our responsibilities. Today as never before in history, the highways of the nation must be adequate at all times of the year to handle the modern mechanized army, and at the same time keep civilian transportation involving largely, as it does, the marketing of farm and food supplies and the carrying of defense workers to industrial plants, on the move without delay," the State Highway Commission told Virginians.

"Under ordinary circumstances, these would not have been serious problems for us to handle. The foresightedness of previous years had modernized our major trunk highways to such a degree that they are equipped to handle their normal traffic load. The problem that has confronted us the most has been the need for rapid development and newly created feeder and access roads to the defense areas."

As had occurred a quarter-century before, employees left to join the armed forces and, in some instances, to take jobs in defense industries. Materials and supplies were in short supply. Tire and gasoline rationing reduced travel, but also cut the accompanying revenue from road-user taxes. *"All but the most urgent and important work… has been postponed until conditions improve,"* the commission said.

Commission members sought to bring *"our highways through the war winters without undue interruption to traffic or serious loss of capital investment"* and to aid as best they could in the nation's defense efforts. At one point, 3,000 pieces of federal equipment were repaired or overhauled at the Department of Highways' equipment depot in Richmond.

Farm labor was hired to help with road maintenance, and students were employed and trained during the summers to assist in drafting rooms.

In 1942, the General Assembly expanded the commission from five to nine members — one from each of the eight highway districts, with the full-time commissioner serving as chairman — and the enlarged group set about planning for the future.

"Under the heavy pounding of war-time traffic and inadequate maintenance, some of the older highway surfaces and bridges are failing and cannot endure for any length of time without costly failure," the commission said. *"The reconditioning or replacement of these will furnish one of the most important salvage jobs in post-war activities."*

The winter of 1945-46 was described as *"the worst experienced during the history of the department… 20,000 miles of low-type road went to pieces. The continued shortage of labor, equipment, and materials had greatly handicapped efforts to make these roads serviceable throughout the year."* The winter added to the post-war recovery woes, which were about to be tackled.

20-YEAR PLAN: UPGRADE ALL ROADS; REPLACE MOST FERRIES

In 1948, the department took over operation of the ferryboat service in Hampton Roads. The service ended in 1957 when the Hampton Roads Bridge-Tunnel opened.

Just after the war, Commissioner Anderson set a new objective for the state's regrouping highway forces: Not a school day lost because of mud. Muddy roads remained a problem in many areas, particularly in winter thaws, and Anderson's idea was to solve that dilemma while providing a solid goal toward which maintenance forces could work.

Moving in other new directions, the commission began implementing a 20-year plan for upgrading all road systems and embarked on a new program intended to replace most of the state's remaining ferries.

As authorized by a revenue bond act passed earlier by the General Assembly, the commission decided during the 1946-47 fiscal year to construct toll bridges to replace ferry crossings on the York River at Yorktown and the Rappahannock River at Grey's Point and to acquire from private owners the ferries that carried vehicles across Hampton Roads between the Norfolk and Lower Peninsula areas. Later, the commission was to construct a modern bridge-tunnel to replace the Hampton Roads ferries. Through separate legislation, the General Assembly would establish a special authority to replace the Chesapeake Bay ferries between the mainland and Eastern Shore with a 17.6-mile toll bridge-tunnel facility and would authorize toll financing for a few other facilities that were considered essential but for which other funds were not available. Unlike the turnpike era a century and a half earlier, this was not to be another period of widespread toll financing for roads. Relatively few were constructed in the 20th century.

State Secondary System Mileage				
Year	Hard-Surface	Soil or Gravel	Unsurfaced	Total
1932*	2,000	8,900	25,000	35,900
1940	6,093	17,742	13,825	37,660
1950	12,092	22,906	4,191	39,185
1960	20,615	19,424	1,784	41,823
1970	25,808	16,074	421	42,303
1980	30,637	12,952	262	43,851
1990	34,978	10,370	137	45,485
2000	37,561	9,551	135	47,247
2004	38,390	9,467	137	47,994

*****_The state secondary system was established_

By mid-1948, the state's road program generally had recovered from the wartime slowdown. A few deferred construction projects had been completed, and many others had been started. The commission said the secondary roads were in better condition than ever before and proudly announced that *"for the second consecutive winter, not one school bus day was lost because of mud on the roads."*

With that objective producing dividends, another goal was set: A reasonably passable year-round road to every reasonably located farm and rural dwelling in Virginia. It reflected the commission's belief that *"there is no comfortable living in rural Virginia without a motor vehicle and a passable year-round road."*

Progress truly was remarkable in those immediate post-war years. From 1945 to 1947 alone, the unsurfaced secondary system mileage was reduced by more than half — from 11,151 miles to 5,184 miles. As the state entered the second half of the century, its road development program was about to enter its busiest time.

Virginia in 1950 had a population of 3.3 million. Motor vehicle registration was approaching a million. The U.S. census that year would be the last showing a majority of the state's citizens living in rural areas. Urban dwellers had grown from 35.3 percent to 47 percent of the total between 1940 and 1950. By the time of the 1960 census, 56 percent of all Virginians would be in urban areas.

Traffic volumes were exceeding estimates, and in August 1950, the commission said that many *"roads designed 10, 15, and 20 years ago were incapable of handling the growing mass of heavy, fast-moving traffic. Throughout the commonwealth, the demand for road improvement was intensified… In most instances, no immediate relief is in sight… Funds simply are not available for the overnight modernization of the entire highway system… In the municipalities, the problem of providing free movement for traffic became increasingly acute. Huge sums will be required to alleviate traffic congestion in Virginia towns and cities."*

Five years later, the commission said again that it felt *"a growing concern regarding Virginia's highway needs. People who use our highways are continuing to pay a big price in lives and money because of inadequacies on our roads. Statistics prove that the better road is the safer road. Highways with controlled intersections, with entrances and exits only at designated points, have fewer fatalities in relation to traffic volumes than do highways that lack such controls."*

It was almost as if the commission knew what was around the next corner.

THE INTERSTATE SYSTEM

Interstate construction in 1964 progresses along the I-81 corridor.

In 1923, a Delaware business executive named T. Coleman DuPont had built a three-mile stretch of divided highway with his personal funds and had given it to the state of Delaware. Road historians generally regard that segment of road as representing the origin of the concept of the superhighway. But Depression, war and catching up on other basic needs had slowed the spread of the concept.

Before his death in 1941, Henry Shirley had seen the need for such a facility in the rapidly urbanizing Northern Virginia suburbs of the District of Columbia. Active planning got under way in the mid-1940s, and the road was built in the late '40s and early '50s. It was Virginia's first superhighway, and the commission named it for Shirley.

Development of a nationwide system of such highways was first seriously considered in 1938, when Congress asked the federal highway agency, by then called the Bureau of Public Roads, to study the feasibility of a toll-financed system of three east-west and three north-south superhighways. The study report encouraged the concept of a superhighway system, but said that it would be far from self-supporting if built on a toll-road basis. It proposed, instead, a network of toll-free roads for which the federal government would pay more than the normal 50 percent federal-aid rate.

The idea was studied further, and in the Federal Aid Highway Act of 1944, Congress called for the designation of a national system of interstate highways that was *"so located as to connect by routes, as direct as practicable, the principal metropolitan areas, cities, and industrial centers, to serve the national defense, and to connect at suitable border points with routes of continental importance."*

It was not until the passage of the Federal-Aid Highway Act of 1956 that sufficient funding was provided for development of the system to begin in earnest. This act created the National System of Interstate and Defense Highways. Eventually, the

system was to total 42,700 miles. It would represent little more than 1 percent of the nation's total road and street mileage, but it would carry 23 percent of the traffic. It was to be financed with 90 percent federal and 10 percent state funds.

Virginia's share was more than 1,070 miles (eventually 1,118 miles), and the Highway Commission assessed what development of the interstate system would mean to Virginia:

"Construction of this modern road network… involves many problems and radical changes in thought. Under the new program, interstate highways will be insulated from marginal traffic generated by motels, service stations, other types of businesses, and dwellings. Traffic entering and leaving these highways will do so at designated points. Cross movements of traffic, with which we are so familiar, will be eliminated.

"The benefits of controlled-access construction are numerous. A modern controlled-access road transforms, in many ways, the area through which it passes. Land values increase. This type of road promotes safety, saves travel time, reduces the strain on drivers, and aids the economic development of the area. Controlled-access standards also protect the state's investment in its highways," the commission observed, even before the first mile of the interstate system had been built.

The commission members recognized, as well, the size of the job before them. *"We are now embarked on the most accelerated road program in the state's history. Unprecedented sums of money will be spent… to provide Virginia with modern adequate highways. Present traffic patterns will be changed, new areas will be opened for business, and residential and recreational development. The future will present a challenge greater than any we have faced in our highway development. What we accomplish will depend largely on public understanding, acceptance, and support."* An extensive series of public hearings was held around the state to discuss plans for interstate system projects with citizens and local governing officials.

The first interstate system hearing in Virginia was held by the Department of Highways on Feb. 20, 1957. It concerned a 10-mile segment of Interstate 95 south of Petersburg. Within the next four months, 10 more hearings were conducted on interstate projects, and construction began on the state's first project on the new system — the six-mile Interstate 95 bypass of Emporia. Early emphasis was on the 1-95 facility because it was to parallel U.S. Route 1, which by the mid-1950s had become the most heavily traveled throughroad in Virginia and one of the nation's busiest highways.

The Emporia bypass also was the first interstate project to be completed in the commonwealth. It was opened to traffic Sept. 8, 1959. The first major interstate route to be completed fully was Interstate 495, the Virginia portion of a beltway circling the District of Columbia, with its final section being opened on April 2, 1964.

By the early 1970s, the interstate system was about 75 percent finished, and it was fulfilling to a large degree the expectations expressed by the commission at the outset of the program. Accident rates on the new superhighways were only about one-half the rates on the older conventional roads; travel time was reduced an hour or more on cross-state auto trips; the new roads stimulated extensive commercial, industrial, and residential growth; and this, in turn, provided broader tax bases for local governments.

A new generation of Virginians, growing up with the interstate system, could hardly remember what travel was like without it.

A NEW STUDY, A NEW NETWORK

Two additional lanes are constructed parallel with the lanes of Route 460 in Giles County in 1969 to create a divided arterial highway.

It soon became evident, however, that the interstate routes alone would not adequately serve the burgeoning population and the increasing desire for mobility by Virginians in the second half of the 20th century. The spreading suburban growth that marked Virginia and other states in the years after World War II was induced in large part by the flexible mobility permitted by the family auto. Suburban housing development was followed by suburban shopping centers and office buildings. It all placed new demands on the state's roads and streets. The 20-year improvement plan that had been implemented by the commission in the immediate post-war years had to be revised and updated frequently to keep pace with changing needs and growth patterns.

In 1962, the General Assembly established a new study commission to examine and evaluate highway needs, revenue, fund distribution procedures, and the organization of the Department of Highways. It consisted of one member from each of the eight construction districts and two citizens at large. The study commission members were appointed by Gov. Albertis S. Harrison Jr., in May 1962, with Sen. William F. Stone of Martinsville, an experienced legislator who had been a chief patron of the act calling for the study, chosen as chairman.

For more than a year, the study commission went about its assignment, reviewing nearly every aspect of the highway program. The commission itself probably was the most important highway study group since the 1916 committee that recommended the establishment of the first state highway system.

The Stone commission submitted its report to the governor and the General Assembly in December 1963, in time for its recommendations to be considered at the legislative session beginning the following month.

Among its points: *"One of the prime factors in inducing business management to select a state for expansion or a new location is a good highway system, which not only is needed for transportation of goods and raw materials but enables employees to be drawn from a wide radius. Some other states have moved ahead of Virginia in expanding their highway systems. We cannot afford to be left behind."*

The study commission also described the motor vehicle as *"an essential and integral part of our everyday life. Its impact upon our economy and way of life has reached dimensions which have exceeded all forecasts."*

In an effort to keep up, the commission said, a new arterial network should be developed to supplement the interstate system.

Douglas B. Fugate, who joined the department shortly after graduating from VMI with a degree in civil engineering in 1927, was serving as assistant chief engineer at the time and in 1964, was appointed commissioner by Gov. Harrison. Fugate proposed the arterial network concept to the study commission and thus became chief architect of the network.

"The arterial road program, when completed, will in conjunction with the interstate system connect every city within the commonwealth of 5,000 or more and nearly every town having a population of 3,500 to 5,000. When completed, there will be an arterial route or interstate route within a 40-mile radius of every town in Virginia," the study commission said.

Development of the network was authorized by the 1964 General Assembly, which also provided additional revenue through increases in the state's motor vehicle registration and operator's license fees. As approved, it totaled more than 1,700 miles and was to be developed chiefly by building new two-lane roadways parallel to existing two-lane primary routes to create four-lane, divided facilities. More than 70 bypasses of cities and towns were to be constructed, to free local streets for local traffic, and many of the bypasses would be constructed virtually to interstate standards.

The arterial network was half-finished within seven years after it was begun. In some quarters, the network was described as a *"model for the nation because of the orderly way in which it ensured up-grading of older primary roads while the interstate system development was still under way."*

In the mid-1950s, when the interstate program was beginning, Virginia had about 300 miles of multi-lane divided highways. With interstate and arterial completion, it later would have slightly more than 3,000 miles of such roads.

STRENGTHENING THE ORGANIZATION

A mowing crew works on the median of I-95 north of Ashland in 1965.

Other study commission recommendations led in 1964 to steps aimed at equipping the Department of Highways to better meet the growing challenge. The General Assembly established the urban street system as a separate entity for the distribution of highway funds and directed that it receive a minimum of 14 percent of all revenue exclusive of federal interstate funds.

The urban system was to include extensions of the state's primary routes within cities and towns and other local streets of adequate width and surface. Eighty-five percent of the cost of building improvements on this system was to be paid for with state highway funds or with a combination of state and federal funds, with the local governments providing the remaining 15 percent. In addition, millions of dollars in state road-user revenue were to be returned to the cities and towns each year for maintenance of local streets.

As another result of the study commission, the Department of Highways was reorganized to reduce the number of individuals reporting directly to the commissioner, giving him more hours a day to concentrate on broad policy and administrative issues.

The new organizational structure provided for the commissioner to carry out his assignment largely through the delegation of responsibility to two persons — a deputy commissioner-chief engineer and a director of administration.

The division organization also was to be changed somewhat to more effectively meet the public's highway needs. Its landscape division, organized in 1930 to deal mainly with erosion control, beautification, and outdoor advertising control, was expanded into an environmental quality division to coordinate increasing ecological considerations. A metropolitan transportation planning division was established to

prepare long-range, comprehensive plans for more than 45 cities and towns and to aid in development of urban mass transit improvements. A data processing division was formed to take maximum advantage of the remarkable time savings permitted through computers. A management services division became responsible for ensuring implementation of internal policies and procedures.

Through the 1960s and into the '70s, the emphasis of the organization continued largely on the interstate and arterial programs, and on upgrading older routes by elimination of obsolete bridges, poor alignment, and curves. The factor of "need" was added to others, such as population, land area, miles of road, and vehicular miles of travel, which long had been considered in apportioning funds.

Improvements also continued on the secondary road system. By 1972, four decades after the system was established, 27,000 secondary roads were hard-surfaced, compared to 2,000 miles at the outset. Only 400 miles remained unsurfaced, and most of them served fewer than a dozen vehicles daily.

The public's investment in Virginia's highways was valued at more than $5 billion. With nearly 12,000 employees, the Department of Highways was the largest agency in state government and was among the half-dozen largest employers in the commonwealth. A strong corps of private contractors had developed, and major construction projects were built under contracts awarded on a low-bid basis. Prospective bidders on this work were required to be "pre-qualified" on the basis of their experience, manpower, equipment, and financial resources, to ensure satisfactory completion of contracts.

Questions about the importance of road and bridge maintenance had vanished long before, and millions of dollars were spent annually to protect the public's investment and to keep the facilities in safe condition.

Some 5,000 department employees were assigned to maintenance operations — snow and ice control, roadside mowing, as well as resurfacing, clearing side ditches, collecting litter, and a multitude of other jobs. The road system they maintained had become the nation's third-largest, covering about 51,000 miles. But for maintenance personnel, the demands sometimes were far from routine. The night of Aug. 19, 1969, was an example.

It was then that rains from Hurricane Camille touched off flooding that swept across large portions of western and central Virginia, striking while people slept. The U.S. Weather Bureau said later that 27 inches of rain had fallen in about eight hours near the little community of Massies Mill in Nelson County. Great torrents of water streamed down the mountainsides, uprooting trees that became battering rams against the houses below. Ordinarily tranquil rivers and creeks poured out of their banks and rushed ahead with massive destruction. Some said it was the worst storm in America's history, and it struck hard at much of the nation's East Coast. In Virginia 114 persons were killed, 37 others were missing, and more than 100 were injured.

Two hundred miles of the state's roads were destroyed, and nearly 100 bridges were wrecked. The cost of repairing the facilities alone would exceed $20 million.

Less than three years later, on the night of June 19, 1972, rain from a new hurricane — one called Agnes and considered a tropical storm by the time it

reached Virginia — caused similar destruction over a wider area from the western regions to the coast.

At least 13 people died; dozens were injured. The property damage climbed above that of Camille, and estimates placed the toll at $160.7 million. Six hundred miles of roads were damaged; 104 bridges were left useless — washed away, heavily damaged, or without passable approaches.

Road maintenance crews hadn't seen problems of these proportions before. Yet, they worked around the clock, and traffic was moving again within hours in many of the flood-wrecked areas and within a few days in most other places. The urgency was underscored because frequently other emergency and rescue operations could not proceed until roads were reopened and river and creek crossings were restored.

CHANGING CONCEPTS

In the heavily populated suburbs of Northern Virginia, special lanes of I-95 (now I-395) were reserved for express buses in 1969.

By the 1970s, Virginia was a rapidly urbanizing state. Its population had grown to more than 4.6 million, with two-thirds living in cities, towns, and suburbs.

Motor vehicle registration had risen to more than 2.5 million. Between 1960 and 1970, travel on the state's highway system had increased more than 65 percent, and on an average weekday, motorists drove 75 million miles on Virginia's highways and streets. The two-car family had become commonplace, and driving was described as the nation's leading form of outdoor recreation.

Years before, agriculture had begun its decline as the principal foundation of the state's economy, although it remained of major importance. New and expanding industries occupied an increasingly vital role in the economic base.

In a December 1971 report to the Virginia Advisory Legislative Council, the General Assembly's continuing study arm, the Highway Commission said that *"much remains to be done in order to provide Virginians with what truly may be considered an adequate, statewide transportation system."*

The council continued, *"In every county, city, and town, there are substandard facilities. Throughout Virginia, there remains thousands of miles of roads and hundreds of bridges constructed more than 40 years ago. They were satisfactory for the uses they were built to serve; they are far from satisfactory for the demands of the 1970s, and for those of the years beyond,"* the commission said.

Commissioner Fugate, writing in the April 1970 issue of the Eno Foundation's Traffic Quarterly, had discussed the changing highway concepts involved in solving such a problem:

"We should not be particularly surprised that transportation planning requirements differ from those of even a decade ago," he wrote. *"For in many respects the nation's people differ — there are far more of them, they tend in growing numbers to congregate in and around the cities, they tend to be more affluent; and they have a new concern for all aspects of the environment in which they live. Thus, it is no longer sufficient to examine highway proposals solely from such standpoints as traffic service, economics, and engineering feasibility. An entirely new range of considerations has developed, and must be accepted by those responsible for the highway program.*

"Such matters as the social impact of highways, environmental enhancement, and pollution are becoming integral elements in the highway planning process. Similarly, in urban regions, attention must be focused more extensively on utilizing the highway as an artery for mass transportation, and on fresh concepts concerned more with moving people than with moving vehicles. Any notions of a comfortable philosophy based on the belief that every problem has a formula for solution and that every decision can be made in conformity with established policy must be forsaken, if indeed they still exist," the commissioner wrote. *"We must greatly broaden our concepts of the highway's role in an increasingly urban society."*

In the heavily populated Northern Virginia suburbs of the District of Columbia, special lanes of Interstate 95, the old Shirley Highway, were reserved for express buses. Commuters were encouraged to leave their cars behind and use the bus to reduce congestion. It represented the nation's first experience with setting aside lanes of interstate highway for buses, and its results were impressive. In barely more than three years, more commuters were riding buses than were driving their personal cars during the morning rush hours.

The success of the Shirley "busway," coupled with increased traffic congestion, led highway officials to allow private vehicles to use the reserved travel lanes as long as they were carrying four or more passengers.

In Southwest Virginia, the challenges were different from those in the highly urbanized regions of the state. In July 1972, hundreds gathered to observe the opening of the Big Walker Mountain Tunnel on Interstate 77. The tunnel, carved through the Appalachian range in Bland County, was heralded as the beginning of a new and prosperous era for the citizens of Southwest Virginia.

Two and a half years later, on Dec. 20, 1974, a second mountain tunnel was completed. The East River Mountain Tunnel, which routes 1-77 traffic through the mountain between Bland County, Virginia, and Mercer County, West Virginia, was built cooperatively by the two states.

Increasingly, the planning function of highway administrators and engineers was changing vastly as society itself sought to adjust to the needs and desires of the expanding, more urbanized population.

More and more, highway planning was related to total community goals. The days of muddy roads, of inadequate technology and equipment, and of neglected maintenance had passed. A modern highway system permitted improved mobility and traffic safety. But there were new challenges to replace the old ones, including those brought about by events happening halfway across the world.

SURVIVING AN OIL EMBARGO

The fuel crises of the 1970s were to have a lasting impact on highway revenues.

In 1973, several Middle East nations imposed an embargo on exports of oil, forcing major changes in the United States and other countries. At the beginning of the 1970s, Virginia's transportation future seemed bright, but the oil embargo and the ensuing efforts to conserve fuel would have a debilitating effect on state transportation revenues for years to come.

Supplies of gasoline and other fuels plummeted, prices soared, and long lines were common at gas stations. The crisis became so severe that on Nov. 26, 1973, Gov. Linwood Holton declared a state of emergency as a result of the motor vehicle fuel shortage.

Federal and statewide conservation policies were implemented immediately. In Virginia, Gov. Holton ordered the speed limit on the interstate system reduced from 70 to 55 miles per hour. The action was followed shortly by Congress setting the same limit on a nationwide basis.

Over the winter, the problem continued to grow. On Feb. 18, 1974, Virginia's newly inaugurated Gov. Mills E. Godwin Jr. took the fuel conservation measures a step further.

He implemented a statewide mandatory gasoline distribution plan, which already was known in several other states as the "odd-even plan."

The plan related numbers on motor vehicle license plates to those on the calendar. A motorist whose license number ended in an odd digit could buy gasoline only on odd-numbered calendar days. Those whose licenses ended in even numbers could buy gasoline only on even-numbered days.

The new plan, and the public's support of fuel conservation efforts, went far toward alleviating the problem. Generally, long waiting lines at gasoline stations disappeared, but gas prices increased substantially. The fuel shortage was eased further by the lifting of the Mideast oil embargo in March 1974.

By April, the situation had improved sufficiently for Gov. Godwin to suspend the odd-even restrictions. But he cautioned that fuel supplies were expected to remain limited and that citizens should continue voluntarily to practice conservation measures. Moreover, he said, the speed limit would remain at a maximum 55 miles an hour.

The crisis had long-term, adverse effects aside from personal inconvenience. Reductions in gasoline use led to reductions in the state's income from the motor fuel tax, the largest single source of revenue for highway construction and maintenance. Only two years earlier, in 1972, the General Assembly had increased the gasoline tax from seven to nine cents a gallon to help finance a new 10-year plan for road and street improvement and for expanded state aid to urban mass transit. Suddenly, revenue was falling below anticipated levels, and the commission forecast a shortfall of approximately $22 million for the 1974-75 fiscal year.

With petroleum being a major ingredient in roadway asphalt, construction costs also rose.

The revenue reductions, combined with sharply rising costs due to rapid inflation, made it clear that Virginia's highway budget wouldn't stretch as far as once hoped, and the commission began a reassessment of the 10-year plan. Also, federal authorities warned that the energy crisis "could critically curtail the federal state highway program," from which came 90 percent of interstate highway construction funds.

The Department of Highways, like most agencies, initiated fuel conservation measures within its own organization. Employees were encouraged to join car pools for trips to work and were required to join such pools for business trips. It was decided to let roadside grass grow to 15 inches instead of 10 inches before mowing and to adjust snow-removal standards by eliminating plowing in subdivisions until snow was at least six inches deep.

Motor oil was saved for reuse in diesel engines and oil-fired furnaces. Oil changes in state vehicles were made every 4,000 miles instead of every 3,000 miles. An increased emphasis was placed on the use of asphalt that had low petroleum content and that required little heating before use.

But while the energy crisis produced changes in operations, and sometimes resulted in inconveniences, it also pointed the way to improved traffic safety. During the critical months of the fuel crisis in Virginia, traffic on the state's major highways decreased for the first time since World War II. The reduced speed limits and travel were accompanied by long-sought reductions in accidents.

In Virginia during the period between December 1973 and April 1974, 52 persons were killed in traffic accidents on the 2,000 miles of highways with reduced speed limits; the toll had been double on the same roads in the corresponding period the year before. In the first six months of 1974, Virginia's total traffic death toll on all of its highways stood at 458, down sharply from 608 in the same period of 1973.

There was another issue that emerged in the 1970s. It was not as immediately dramatic as the energy crisis, but it was one that would have a major effect on the department — concern about the environmental impact of highways.

The broadened public concern for environmental protection was accepted by department engineers as an indication of the public's willingness to pay the cost required for higher levels of preservation and conservation.

Opposition to the construction of Interstate 66 in Northern Virginia prompted department officials to examine even more closely the environmental impact highways would have in predominantly urban areas. On April 4, 1972, the 4th U.S. Court of Appeals in Richmond barred construction of the interstate through Arlington County until an environmental impact statement was completed.

When the final segment of I-66 between the Capital Beltway and the Theodore Roosevelt Bridge was opened on Dec. 22, 1982, the highway was vastly different from the one proposed 26 years earlier. The newly opened highway had four lanes instead of the eight originally planned, and it was restricted to car pools, buses, and Dulles International Airport traffic during morning and evening rush hours.

As a result of the department's heightened awareness of environmental issues, highway construction plans were scrutinized repeatedly for environmental impacts, particularly in urban areas. Among other efforts, the department began to include provisions for noise walls and hiking and biking trails. In addition, when possible, plans were altered to avoid the destruction of historical and cultural resources.

A BROADENED MISSION

I-195 in Richmond was constructed through heavy traffic on historic thoroughfares by using the right of way of the Richmond, Fredericksburg and Potomac Railroad.

Economic conditions in the 1974-76 biennium slowed virtually all of the department's operations as construction costs climbed 34 percent and revenue from state highway-user tax sources fell approximately $30 million below estimates. A seven-month moratorium was placed on most new construction, and the General Assembly asked the Virginia Advisory Legislative Council to study the impact of the rising costs and reduced revenue.

The 10-year road and street improvement program approved by the commission in 1971 set the cost of highway improvement needs at $5.2 billion by 1982. Although cost and income trends seemed to stabilize by the mid-1970s, attainment of the 10-year objectives still proved beyond reach by 1982.

It was also in the wake of the country's fuel crisis and the dollar's declining buying power that the Department of Highways would undergo major organizational changes. The changes resulted from action of the 1974 General Assembly, which expanded the duties of the department and enacted a new transportation policy for Virginia. To reflect this expansion, the department was renamed the Department of Highways and Transportation.

"It is hereby declared to be the policy of the Commonwealth of Virginia that the present and future welfare and mobility of the citizens of Virginia require a balanced transportation system, consisting of coordinated private and public facilities and services, provided and administered to assure adequate, safe, economical, and efficient transportation," the assembly said.

Such a system, it continued, should *"stimulate economic growth, provide access to employment, health, educational, recreation, and other activities for all… citizens,*

facilitate the flow of commerce, encourage efficient allocation of human and economic resources, and preserve the inherent advantages of each mode, while utilizing inter-modal advantages to the fullest extent."

The department's job in the planning of air, rail, and waterway facilities was limited by the General Assembly to one of coordination. The authority of other state and local agencies and the private sector was kept intact.

Still, precisely what would be the state government's role in the planning, development and administration of highways, rail transportation, air travel, urban mass transit, ports and waterways remained a question in the minds of department officials. And, how should state government's resources be organized to fulfill the role?

The answer to these questions as they related to rail transportation came in 1973, after the bankruptcy of eight rail companies in the Northeast and Midwest regions of the country led the Congress to pass the Regional Rail Reorganization Act. Among other things, the act provided limited funds for rail financial assistance.

In order to qualify for the federal subsidies, states were required to develop rail plans providing an overall appraisal of their statewide rail systems and making detailed analyses of sections for which financial aid was to be requested. Development of this plan in the commonwealth was assigned to the Department of Highways and Transportation.

Virginia was fortunate that, with one exception, self-supporting rail service was provided by companies recognized as leaders in the railroad industry. The exception was the service formerly provided by the bankrupt Penn Central on the Eastern Shore and on a short segment in the Winchester area.

Since rail service in both of these areas was considered vital, the department submitted Virginia's completed plan to the Federal Railroad Administration on Jan. 9, 1976, and it was approved less than six weeks later.

The role of public transportation in department operations enjoyed increased emphasis beginning in the late 1970s. Recognizing that well-planned transit service could reduce traffic congestion, air pollution, and the costly consumption of fuel, the 1978 General Assembly established a public transportation division within the department.

The decision to create a new division expanded a transit assistance program that began in the department nearly a decade earlier, elevating it to a higher organizational level and reflecting the growing importance of mass transit operations, particularly in urban areas.

MILESTONES AND NEW FINANCIAL FORMULAS

The second Hampton Roads Bridge-Tunnel, shown here under construction, was completed in 1976.

By 1975, revenue and cost trends stabilized sufficiently to permit resumption of a regularly scheduled highway construction program, with 172 projects totaling nearly 137 miles and $191.5 million placed under contract.

A milestone in Virginia transportation occurred on June 3, 1976, when tolls were removed from three Tidewater bridges and the Hampton Roads Bridge-Tunnel. It was also on that day that the second Hampton Roads Bridge-Tunnel, running parallel to the first, was opened. Though it had been a long time coming, many hailed the removal of the tolls and the opening of a second Hampton-Norfolk connector as the most important factor in Tidewater's development.

In 1977, Virginia's laws governing the allocation of state highway revenue were rewritten and greatly simplified by the General Assembly.

Over the years, the allocation formulas had become steadily more complex as additional programs were initiated and as new or increased sources of revenue were provided. One result was that an important premise — that citizens ought to be able to understand what government is doing, and why — was jeopardized where the spending of highway funds was concerned.

Recognizing that the public's investment in highway facilities must be guarded, the legislation mandated that state funds be allocated first for the maintenance of all existing systems before any distribution for construction or other purposes.

Fifty percent of the construction funds was allocated for the primary system, 25 percent for the secondary system, and 25 percent for the urban system.

The new legislation reflected the growing influence of the state's urban areas by simplifying the methods of distributing the funds within each system and making allocations to predominantly rural and predominantly urban districts more equitable.

The General Assembly action also reduced from 15 percent to 10 percent the municipalities' share of urban construction costs.

ENERGY CRISIS REVISITED

Public transit became important to commuters in the 1970s for reasons of convenience and economics.

Another worrisome fuel shortage occurred in the summer of 1979, and left nagging questions about highway-related transportation for the years ahead. This time, as before, traffic declined, automobile sales dropped sharply, and many commuters sought public transportation or car and van pools as means of getting to and from work. Again, that meant a decrease in revenue from the motor fuel tax, the largest single source of income for road construction and maintenance.

As the state, its localities, and the commission became increasingly engaged providing improved public transportation, it was apparent that transit for most communities meant buses. But buses, like automobiles, required adequate highways and streets to operate safely and effectively.

Amid the questions and uncertainty, the energy situation led to a reduction in the traditional growth rate of fuel, tax, and other road-use tax revenue. In the past, growth had helped partly to offset the higher construction and maintenance costs brought on by inflation.

Progress on interstate and arterial systems had slowed somewhat due to the shortage in revenues. Highway officials had expected completion of the two systems by the early ‘80s. More than three-quarters of the interstate system was completed by 1972, but it would take another 20 years to complete the remaining 25 percent.

With the shortage in revenues and steadily increasing road maintenance requirements, the highway construction program was set back substantially, and the future of this program in Virginia was tinged with doubt as a new decade began.

INTO THE 1980s: NEW FINANCING AND BUILDING METHODS

In 1980, the General Assembly approved an increase in the state motor fuel tax to provide millions of dollars more for the highway program.

In Virginia as in other states, the new decade was marked by a highway construction and improvement program caught in a tightening squeeze caused by inflation and a drop in revenue.

The dilemma was compounded by sharply higher maintenance expenses required simply to take care of the existing state road system and its bridges.

As a result, the amount of new construction fell to its lowest level in five years. In the 1978-79 fiscal year, 206 contracts totaling $326.5 million were awarded for work on 215 miles. The following year, the commission was able to award only 143 contracts, amounting to $190.6 million, to build or improve 90 miles of the system.

Without some action, it was estimated that by 1991 maintenance costs would take all the revenue generated by the gas tax, leaving no money at all for new construction. Not only were construction funds decreasing, they were on a roller coaster ride. They plunged from $233 million in 1975 to $117 million two years later, only to rebound to $200 million in 1980 and then to drop again, to $95 million in 1982. Meaningful planning became impossible.

Coupled with spiraling costs, income from state highway-user taxes dropped below levels anticipated and appropriated.

Commissioner Harold C. King, a former Federal Highway Administration official who had been appointed to the state position in 1978, reported on the overall situation in a December 1979 letter to Gov. John N. Dalton and members of the General Assembly:

"Virginia's highway construction and improvement program is in jeopardy. It is entirely possible that within the 1980-82 biennium, it will become necessary to forego any new state-financed improvements, and to reserve state construction money to match federal aid. In the 1982-84 biennium, it may be impossible to match federal aid, thus risking the loss of millions of dollars needed to complete our interstate routes and to improve bridges and other existing highway facilities."

After much consideration, the 1980 General Assembly approved a 2-cents-a-gallon increase in the state motor fuel tax. The increase provided approximately $576 million more annually for the state highway program.

Barely had the state legislative session ended, however, when federal authorities announced the curtailment of the federal-aid program nationwide, dealing a second blow to an already sparse transportation budget.

After extensive conferences with federal authorities, the commission was authorized to begin projects totaling about $126 million, some $16 million below the level anticipated before the cutback was imposed.

By 1980, Virginia continued to maintain the nation's third-largest highway system, with 52,600 miles of interstate, arterial, primary, and secondary roads, behind only North Carolina and Texas.

In addition, the state provided financial aid to 67 cities and towns with populations over 3,500 to assist them in maintaining about 8,100 miles of local streets.

At the beginning of the decade, the state system also included approximately 12,000 bridges, with approximately 500 more bridges within the municipalities.

Even in a time of high fuel prices, motorists drove an average of more than 100 million miles daily on state highways and streets.

Approximately 3.2 million Virginians were licensed drivers in 1980, and 4 million motor vehicles were registered.

ADMINISTRATIVE BELT-TIGHTENING

VDOT employees in the Negotiation Processing Center, Right of Way Division, prepare letters to landowners and attorneys.

In 1980, the General Assembly ordered the Joint Legislative Audit and Review Committee (JLARC) to review the department's operations and finances and recommend changes to make the best use of the resources available. Between July 1, 1978, and Nov. 1, 1981, employment in the department statewide was cut from 12,865 to 11,030, a reduction of more than 14 percent. The cutbacks were partly the result of the JLARC evaluation, which recommended reductions in manpower.

While most of the decline was accomplished by attrition, some employees were laid off from their jobs. The lower payroll costs cut approximately $15 million from the budget each year.

The employment decline reflected a determination to streamline the organization, but to a greater degree it was a reflection of the shrinking highway program.

Despite cutbacks in personnel and efforts to save money, the funding situation became increasingly severe, prompting the Department of Highways and Transportation to reassess the status and public use of substandard roads and bridges throughout the state.

Local governments were asked in 1981 to identify what they regarded as their most serious highway needs. The result of that request was the development of the Six-Year Improvement Program for the highway system. The program was adopted on July 1, 1982, and it established a schedule of construction and reconstruction projects for the interstate, primary, and urban road systems in Virginia on a priority basis.

NEW DIRECTIONS

Traffic volumes on Virginia highways continued to climb in the 1970s and '80s. Congestion led to creation of HOV lanes (right).

Still concerned about a rapidly growing backlog of highway, bridge, and public transit needs, the 1982 General Assembly provided a substantial increase in funds to shore up the state's lagging transportation budget.

In doing so, the legislature averted a revenue crisis of major proportions that had threatened to bring the state's highway system improvements to an abrupt halt.

By enacting a 3 percent oil excise tax, plus increases in motor vehicle registration and several other highway-user fees, the legislature authorized an estimated $263 million in additional money — $224 million for highway and bridge construction and reconstruction and $39 million to assist local public transportation systems with capital and administrative costs.

The new funds enabled the state to move forward with transportation improvements that otherwise would have been deferred indefinitely or, in some instances, abandoned entirely.

Out of the revenue collected for highway use, maintenance of the existing roads was paid first, as mandated by the General Assembly in 1977. This meant that a loss of funds had to be absorbed by the construction program. Escalating maintenance costs and the sagging highway budget left several districts' construction programs in danger of collapse. Though lawmakers repeatedly tried to deal with the problem by increasing gas taxes, falling sales left only a string of broken promises to build new or expanded roads.

The answer to the transportation crisis of the mid-1980s clearly was to find a new and stable revenue source. Some thought that explosive growth in areas like Northern Virginia and Tidewater made the "pay-as-you-go" method of financing highway construction projects obsolete; urbanization had occurred too quickly for road construction to keep pace, particularly in light of the revenue decline and increased costs seen throughout the '70s.

MEETING THE CHALLENGE

The Commission on Transportation in the 21st Century (COT 21) identified more than $20 billion worth of highway construction needs.

Until 1984, the eight transportation districts had remained as originally established in 1922—Bristol, Culpeper, Fredericksburg, Lynchburg, Richmond, Salem, Staunton, and Suffolk. The 1984 General Assembly authorized the creation of the Northern Virginia district to respond more effectively to the area's transportation problems. The newly formed transportation district was carved from the existing Culpeper district to include the counties of Arlington, Fairfax, Loudoun, and Prince William.

In the General Assembly, the growing influence of urban areas also led to greater pressures to modify again the formulas that allocated road-building monies around the state.

In July 1985, the department began using a new allocation formula, enacted by the General Assembly, to distribute funds for highway construction and other programs. It was the first major change in highway fund distribution since 1977, and it increased funding to urban areas.

Under the new formula, 5.67 percent of the money came off the top for hard-surfacing dirt roads. Of the remainder, 40 percent was allocated for improving the primary system. The remaining 60 percent was split equally between the secondary and urban systems.

In 1986, newly inaugurated Gov. Gerald L. Baliles presented a series of initiatives to improve transportation and prepare for the 21st century. His initiatives and subsequent legislative action marked a period of sweeping changes that eliminated the dependence on user fees only and "pay-as-you-go" financing for transportation needs. On Jan. 13, 1986, in his State of the Commonwealth Address, Gov. Baliles called for a vastly different approach to paying for transportation:

"Periodic tax increases have helped only by providing new revenues, but they only postpone the problems — they don't solve them," the governor said. *"Even worse, the adjustments to our highway funding formula have divided us, competing with one another for the inadequate funds… the heart of the problem now is that we can't begin to plan for future needs, if we can't complete meeting today's needs."*

Gov. Baliles called for a blue-ribbon, non-partisan commission of leaders from government, business, finance, and transportation. Its challenge was to study how to plan and finance the comprehensive transportation system Virginia would need to take it into the next century.

The Commission on Transportation in the 21st Century (COT 21) identified more than $20 billion worth of needs in highway construction, rail, public transit, ports, and airports by the turn of the century. To meet those needs, the commission recommended major changes in the way Virginia paid for transportation projects.

Traditionally, users had paid for transportation in Virginia. Improvements and maintenance were paid through such sources as taxes on motor fuels and license plates. Roads were paid for out of current funds—no general fund financing, no debt financing or bond issues, except those for which there was a specific revenue source, such as a toll road.

The commission recommended that the user fees be increased slightly, and also recommended that the state's general sales tax be raised and the increase dedicated strictly to transportation uses. Specific percentages would be allocated to specific modes of travel—ports, airports, public transportation, and roads. The commission also recommended the use of bonds to finance major, long-term projects.

While the commission was doing its research, the 1986 General Assembly appropriated $150 million in "seed money" to complete designs and purchase right of way for critical highway projects so they would be ready to be built when the additional monies were made available.

In September 1986, the legislature met in a special session and agreed with the governor and the commission that "business as usual" was not enough to address Virginia's transportation needs. A new and vastly different approach was needed to build the road to the future.

To help stabilize the funds, the assembly added a half-cent to the state's general sales tax, raising it to 4.5 cents on the dollar. It also added 2.5 cents to the fuel tax, making it 17.5 cents per gallon. Further it increased the vehicle titling tax from 2 to 3 percent of the purchase price and added $3 to the annual license plate fee.

With part of the general sales tax earmarked for transportation, the state was assured that funds would keep pace with inflation and would not be influenced as much by fluctuating oil prices and vehicles that use less fuel.

The new revenues generated more than $420 million a year, with 8.4 percent designated by law for public transportation systems, 4.2 percent for port improvements, and 2.4 percent for airport improvements. The remaining 85 percent was dedicated for highways.

During that session, the General Assembly also changed the name of the agency to the Virginia Department of Transportation (VDOT) to reflect the increased emphasis on diverse modes of transportation. The legislature also renamed the State Highway and Transportation Board as the Commonwealth Transportation Board (CTB) and expanded the board from 12 to 15 members, with five serving at large and the commissioner serving as chairman.

In addition to increasing its commitment to transportation in general, the General Assembly increased its commitment to separate transportation programs specifically for economic development. This money was used to construct "access" roads or rail spurs to factories and other industrial sites where companies were locating or expanding.

By 1990, $6 million a year was available in road and rail industrial access funds, up from $3 million in 1986. Similar programs provided new or improved roads to recreational areas and airports.

Economic development also was the reason the 1989 legislature took the major step of providing special financing to widen and straighten the longest road in the state. That road, Route 58, stretches more than 500 miles from the Atlantic Ocean to the Kentucky border at the western tip of Virginia.

To pay for the project, the legislature authorized $600 million in bonds to be sold over several years and paid off with $40 million a year from the state's "recordation tax," the state fee imposed at the county courthouse or city hall when real estate transfers are recorded.

The legislature also took several other actions in the last half of the decade to increase funds for transportation projects. It gave localities the right to create special tax districts and impose local income taxes. In the special tax districts, land owners and developers paid a special tax, up to 20 cents per $100 assessed, to be used to build or improve roads sooner than would have been possible without the special tax. A local income tax of up to 1 percent could be levied in certain localities if the local voters authorized it.

The General Assembly also gave localities $40 million a year for five years from the recordation tax to spend on education or transportation, beginning in 1990. This was separate from the $40 million a year designated for upgrading Route 58.

SPECIAL ACTION IN NORTHERN VIRGINIA

Sections of the Fairfax County Parkway were built with county, state and federal funds.

Due to the critical transportation needs in Northern Virginia, those localities took the lead in adopting alternative financing methods for highway construction and improvement projects.

Northern Virginia was first in using a "proffer" system that allowed the counties to negotiate with private developers in zoning matters so the developers paid for needed public improvements, such as new streets and schools, in return for favorable zoning decisions.

Some local governments also issued their own bonds for highway work. Proceeds from these bond sales were used either to supplement state funds or to build road projects for which state funds were not available.

In 1988, the General Assembly, with the support of Gov. Baliles, approved legislation that allowed private companies to build and operate for-profit toll roads. Companies must have their plans approved by state and local officials before building, and the toll structure must be approved by the State Corporation Commission. Private firms took the lead in other highway projects in Northern Virginia. The first 1.5-mile segment of one of Fairfax County's most-needed roads was built by a developer in conjunction with construction of a major office park.

County, state, and federal funds were used to build other sections of the 35-mile Fairfax County Parkway. Another example of public and private sector cooperation was the financing of the improvements to Route 28 in Northern Virginia. The state sold bonds to widen and upgrade the heavily congested road near Dulles Airport, with the owners of commercial and industrial land in the area paying off the

bonds through a special property tax. This first special tax district was authorized by the General Assembly in 1987. Since then, similar tax districts have been permitted in other areas of the state.

The transportation initiatives and increased funding since 1986 meant a doubling, and in some areas a tripling, of the highway construction program. That kind of expansion in a short time frame could have led to problems if steps to address them were not taken. There were two questions in particular that had to be answered: could the road-building industry absorb the additional work, especially without a jump in prices, and could VDOT manage such an expanded program?

The answer to both questions was "yes." The COT 21 members had looked into the first, and Gov. Baliles and the legislature had taken steps to deal with the second.

The cost of highway construction remained stable, in part because of the increased competition for the road-building dollars. The number of contractors interested in working on Virginia's roads increased, as did the number who bid on the various construction projects.

The department took several steps to discourage and detect collusion while making sure bids and prices remained competitive in the expanded construction program. Among the steps was the creation of the nation's first full-time, multi-person, antitrust unit in a state transportation agency.

When Gov. Baliles first proposed his transportation initiatives, he brought in a management expert, Ray D. Pethtel, to head the 11,000-employee agency. Pethtel, who previously had served as head of JLARC, instituted a series of changes within the agency to make it more efficient and effective.

The time it took to complete highway projects was cut 20 percent, and the job was being done with fewer people per dollars spent. Substantial authority was decentralized to field offices around the state. Training was given new emphasis, along with increased communication with employees, the general public, elected officials, construction contractors, design and engineering consultants, minority-owned businesses, and others. Use of computers and other technology increased in areas from surveying to drafting.

TRANSIT MAKES ITS MARK

Northern Virginia's I-66 was completed in 1982 as a four-lane limited access highway. It's among Virginia's first projects to incorporate multimodal connectivity. It featured Metrorail in the median.

When funds for highway construction doubled, so did funds for public transportation services. Increasing pressures for these services were felt in all sections of Virginia.

Public transportation service includes a lot more than buses in the cities or the Metrorail subway in the Washington, D.C., area. It includes ridesharing efforts with car and van pools, park-and-ride lots, special high occupancy vehicle (HOV) lanes on congested highways for vehicles carrying at least two and sometimes three people, special transportation for elderly and handicapped persons, and development of commuter rail service.

By the late 1980s, public transportation was making its mark. More than two-thirds of the people crossing the Potomac River between Northern Virginia and Washington, D.C., during rush hours traveled either by public transit or car pool. But many more innovations beyond public transportation would be required to keep Virginia moving in the last decade of the century.

THE 1990s: NEW TECHNOLOGIES AND FUNDING INFUSIONS

I-81 became a major north-south artery for long-haul truckers.

The 1990s brought no slowdown in the increasing needs of Virginians for mobility. Surging volumes of traffic — combined with aging highways, accelerating technological progress, and landmark legislation — brought a dynamic set of challenges to transportation in the century's last decade. Public demands for more transportation capacity were met with dramatic increases in transportation funding and burgeoning highway construction programs. In that context, VDOT sought and implemented continuous innovation in its management and engineering programs.

From 1980 to 1990, vehicle registrations jumped from 4 million to 5 million. Miles traveled daily in Virginia leaped from 105 million to 165 million. Despite the demand for more roads and bridges, voters indicated in 1990 that they were unwilling to give up completely the "pay-as-you-go" philosophy of funding for transportation. In a referendum, they turned down a proposal to sell pledge bonds to finance highway improvements.

At the same time, the commonwealth was moving toward a more modern transportation infrastructure. In 1990 the General Assembly, at Gov. Douglas Wilder's request, created separate secretariats for transportation and public safety, functional areas that had been combined in the past. The legislation also provided that the secretary of transportation would serve as chairman of the CTB, and the commissioner of the Department of Transportation would become vice-chairman.

Within a few months, however, the department experienced the effects of a weakening economy. The resulting loss of revenue caused VDOT to scale back maintenance, mowing, and snow plowing; and the value of construction contracts awarded for highway improvements fell 28 percent from 1990 to 1991. By 1992 more than 100 highway projects had been delayed. In addition, maintaining and rebuilding roads — especially aging interstate highways — was becoming a special challenge. Help was on the way, however, in a new federal aid package.

FEDERAL LEGISLATION SETS STAGE FOR THE DECADE

Establishment of the Virginia Railway Express in 1992 provided a new alternative to commuting on congested highways.

In December 1991, Congress passed a six-year, $151 billion transportation act called the Intermodal Surface Transportation Efficiency Act (ISTEA). It was the first reauthorization of federal surface transportation legislation since the beginning of the interstate program. While ISTEA provided funds for highway construction and repairs, the emphasis of the legislation was on preservation, operation, and better management of existing transportation facilities. Intermodal transportation, in which various modes of transportation are designed to work together to move people and products, was a key theme.

In tune with that theme were two major manifestations within the commonwealth in the early 1990s of increased reliance on intermodalism. One was the establishment of the Virginia Railway Express (VRE), developed to provide 4,500 or more Northern Virginia daily commuters a reliable alternative to congested highway travel. With VDOT's support, the VRE opened 36 miles of service between Manassas and Union Station in Washington, D.C., in June of 1992 and a 57-mile VRE line from Fredericksburg to the capital city in July of that year.

That same month, the General Assembly elevated VDOT's Division of Rail and Public Transportation to separate agency status. The new department would help Virginia achieve a balance between building more highways and improving and expanding public transit. As the decade proceeded, a citizens' campaign to establish rail passenger service between Bristol and Richmond and Washington, D.C., built up steam. In addition, planning for high-speed rail service from Washington to Richmond and on to Charlotte, N.C., gained momentum.

The move toward intermodalism reflected to a large degree the intensified concern for the environment, as did a change in VDOT's mission statement in 1991. No longer

would the statement provide only for "a safe, efficient, and effective surface transportation system"; now it also would include an "environmentally balanced" system. Consequently, environment-protecting policies of the department were given new priority, and minimizing disturbances to the state's natural and historic resources took on new importance. Roadway noise levels in neighborhoods were lowered by shifting highway alignments and constructing sound barriers. Wetlands lost to highway improvement projects were replaced with similar and even additional wetlands nearby. HOV lanes were constructed and motorists were encouraged to carpool.

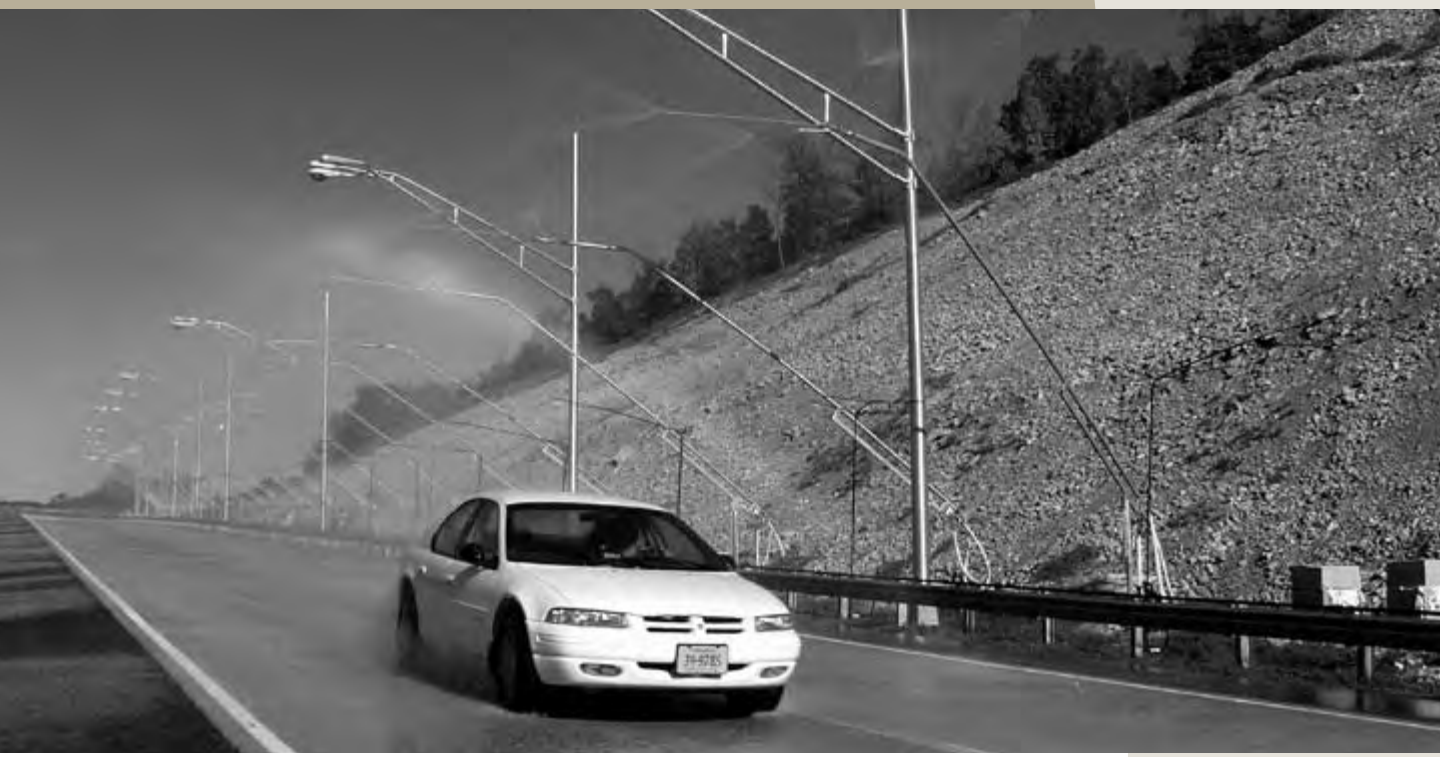
Historic sites were assessed and, whenever possible, were preserved before highway projects commenced. In addition, VDOT's Adopt-a-Highway Program, inaugurated in 1988 to remove litter from Virginia's highways, became one of the nation's largest volunteer programs in the 1990s.

A popular feature of ISTEA was a provision for "enhancement" grants, which were awarded to localities for increasing the usefulness of transportation facilities, making them more aesthetically pleasing, or creating them from scratch. Consequently, the CTB awarded millions of dollars over the decade to restore old railroad stations, preserve historic sites, create hiking, biking, and driving trails, landscape transportation facilities, and more.

Even as a new priority was being placed on the environment and alternative modes of transportation, federal funding levels for Virginia's highways increased dramatically through ISTEA — from $290 million annually to an average of $436 million. At the beginning of fiscal year 1992-93, VDOT's budget was increased, for the first time in two years, to $1.89 billion. The budget allocations included a total of $829.5 million for transportation improvement programs and $518 million for state highway maintenance.

VDOT Commissioner Pethtel was positive in his outlook, predicting that ISTEA *"allows us to deliver a strong, stable transportation improvement program."* Virginians looked forward to spending $5 billion during the next six years in state and federal funds on highway improvement projects, mass transit, ports, and airports.

INTELLIGENT TECHNOLOGIES APPLIED TO HIGHWAYS



Virginia's Smart Road in Montgomery County tests vehicles and vehicle systems under varied conditions, including rain and snow, which can be produced by the devices shown here.

The growing numbers of vehicles using the highways in the 1990s demanded more efficiencies in the operation of those highways. Early in the decade, VDOT engineers worked with national committees to evaluate the potential benefits of what became known as "intelligent transportation systems"—a whole new array of technologies being applied to roadways, vehicles, and traffic management. Often these systems were adapted from technologies developed earlier by the defense industry. Upon being named commissioner in 1994, David R. Gehr, a veteran VDOT engineer and administrator, secured a position for the agency as a national leader in implementing these new systems.

In 1998, under Gehr's leadership, the department consolidated these evolving technologies across Virginia under a program called "Smart Travel." The program included regional Smart Traffic Centers to help manage traffic and incidents; traffic signals coordinated by computers; Internet pictures of traffic conditions; a statewide Transportation Emergency Operations Center in Richmond; toll booths that automatically deduct tolls from motorists' accounts; and truck weigh stations that check truckers' registrations and weight data without stopping their trucks.

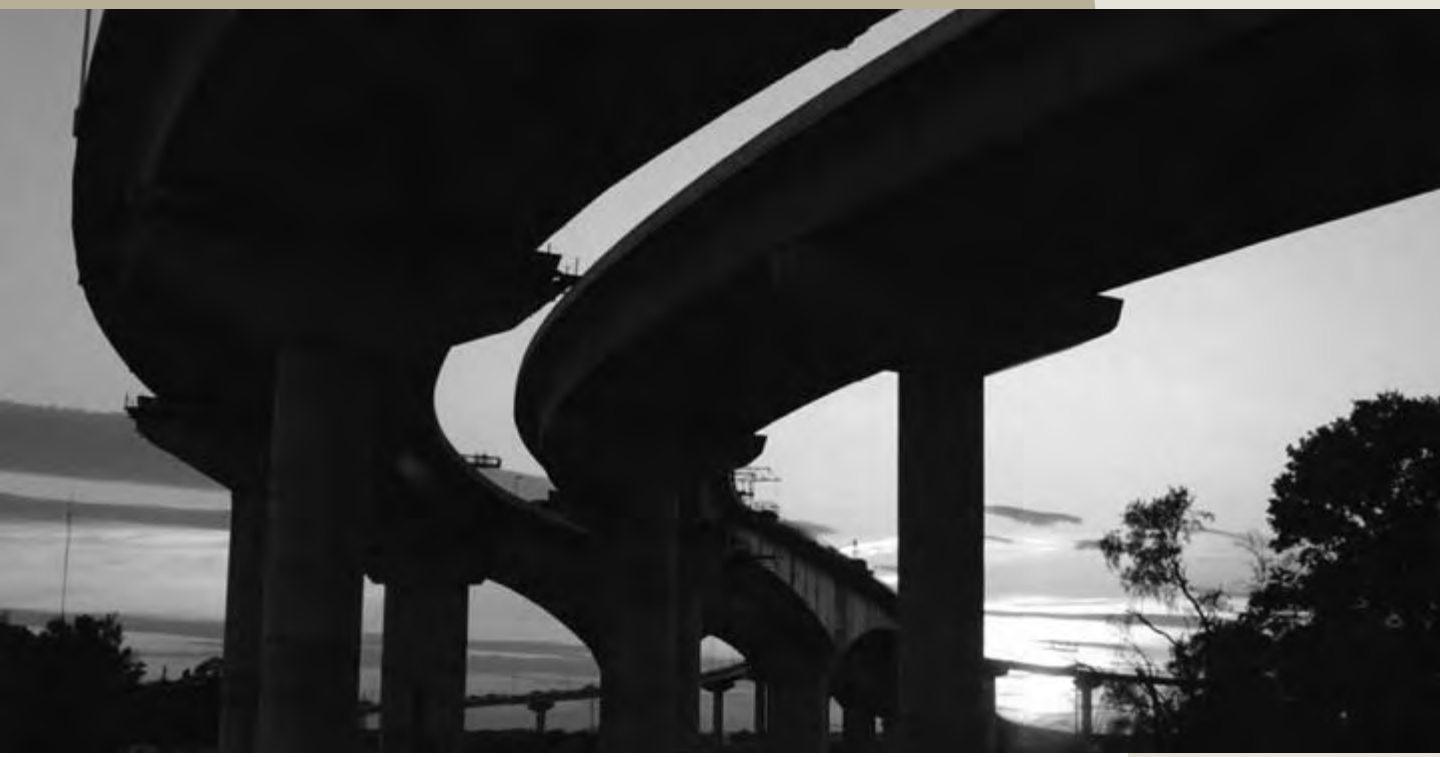
In a special effort that showed Virginia's determination to make full use of technology, a "Smart Road," the first roadbed in the nation built specifically to test intelligent transportation systems, was constructed by VDOT and Virginia Tech. It was designed as part of a new highway between Blacksburg and I-81.

By 1990, computers linked VDOT employees throughout the state and, by the end of the decade, engineers in several locations were working simultaneously on the same road design plans, via computer, without shipping cumbersome blueprints

back and forth. As the decade progressed, solar power was weighing and classifying vehicles as they crossed pavement sensors—and there was much more. Surface condition analyzers (SCAN) were recording roadway temperatures, moisture, and salinity to give road crews critical information for timing their application of chemicals to pavements during winter storms. Management information systems were keeping vast data on highways, bridges, signals, and signs in order to engineer safer roadways and maintain them more efficiently. Also, highway contractors were accessing project advertising schedules and viewing awards for highway contracts via the Internet.

These efficiencies were needed more than before after the department lost 927 senior employees through an early retirement option in 1991 during Gov. Wilder's administration and when another 1,227 employees left in 1995 through a retirement option offered by Gov. George Allen. Both events thinned VDOT's senior employee ranks and dropped full-time employee strength to about 9,700, the lowest since 1986. Those losses forced increasing reliance by the department on consultants and contractors to do work traditionally performed by VDOT employees, and that "outsourcing" became a continuing trend. It closely resembled another trend gaining momentum throughout the commonwealth and the nation — "privatization."

PRIVATIZATION TAKES HOLD



The Pocahontas Parkway, carrying traffic between Chesterfield and Henrico counties via a bridge over the James River, was built under the Public-Private Transportation Act passed by the General Assembly in 1995.

In 1993, ground was broken for the Dulles Toll Road Extension, known as the Dulles Greenway, a 14-mile stretch from Route 28 at Dulles International Airport to Leesburg. It would be built and operated as a private enterprise—the first private toll road built in Virginia since the 1800s. It followed the General Assembly's 1988 Virginia Highway Corporation Act, which allowed a private corporation to build, own, and operate a toll road for profit.

Then, in 1995, the General Assembly introduced a broader opportunity for privatization by passing the Public-Private Transportation Act (PPTA), a part of Gov. Allen's legislative package. The act allowed private ventures to build new transportation facilities and expedited new cooperation between VDOT and the private sector.

The first PPTA project approved by the CTB was the Pocahontas Parkway, or Route 895, begun in 1999 by the combined forces of two major engineering firms. The parkway, a toll road crossing the James River just south of Richmond, connects Chesterfield and Henrico counties. It provided much easier access to Richmond International Airport for many motorists in the metropolitan area. Also notable among privatization measures was a pilot program to allow private entities to maintain and operate long stretches of Virginia's interstate, including much of I-95, I-77, and I-81. A new firm, Virginia Interstate Maintenance Services Inc., was created by a corporate partnership of engineering firms to meet the requirements of the pilot, which ran from 1997 until 2002.

Meanwhile, highway construction expenditures continued to climb. The value of contracts under way by VDOT increased from about $1 billion in 1994 to about $2.2 billion in 2000, representing a new infusion of funds from state and

federal legislation. In 1998, the federal transportation legislation of 1991, ISTEA, was replaced by the Transportation Equity Act for the 21st Century (TEA-21), Under TEA-21, Virginia began receiving about 62 percent more in federal funds annually than it had under ISTEA, bringing the federal funding up from about $415 million per year to $671 million. In addition, Virginians also were guaranteed 90.5 cents on each dollar in Highway Trust Fund contributions, instead of 80 cents as provided under ISTEA.

ACTING ON FUTURE MOBILITY NEEDS

The award-winning Varina-Enon Bridge over the James River south of Richmond employed a dramatic cable-stayed design.

Major highway construction projects were completed during the 1990s, among them the last stretch of Virginia's interstate network, a section of I-295 around Richmond finished in June 1992. The completion of I-295 brought the number of miles of interstate highway in the commonwealth to 1,105. Where I-295 crosses the James River, the Varina-Enon Bridge was constructed with a cable-stayed design used on only a few other bridges in the nation. Cables fan out from two 300-foot-high towers on the bridge structure, making for a dramatic and beautiful feat of engineering.

Completion of I-295 was preceded by a few weeks by the opening of the Monitor Merrimac Memorial Bridge-Tunnel (MMMBT). This massive project carries traffic over 3.5 miles of the waters of Hampton Roads and under almost one mile of those waters through a tunnel of twin tubes. The tunnel required joining 15 300-foot sections of the steel tubes, each wide enough to carry four lanes of traffic. When encased in concrete, each section weighed 28,000 tons, and each had to be joined to others under the water with a tolerance of one inch. The MMMBT enabled I-664 to link Newport News and Suffolk and put the last piece in place in a 55-mile interstate beltway in the region. It became the second water crossing from the Peninsula to Southeast Virginia after the Hampton Roads Bridge-Tunnel, which opened its first two lanes in 1957 and its second two lanes in 1976.

A choke point of congestion at the George P. Coleman Bridge across the York River between Yorktown and Gloucester Point was remedied with the conversion of the bridge from two lanes to four. It was a marvel of engineering that provided for construction of the new, larger spans in Norfolk and the delivery of them, by barge, to the reinforced piers. The new spans were set in place while closing the bridge to traffic for only nine days. The innovative project won several awards.

Meanwhile, renewing the aging interstates without disrupting travelers on them was a continuing challenge, one that was met with intense planning and innovative engineering. Chief among these projects was the intersection of I-395 and I-495 with I-95 in the Springfield Interchange in Northern Virginia. This facility carries almost 400,000 vehicles daily on traffic lifelines for the entire East Coast. In the same period, VDOT began to convert the four-lane I-81 corridor to six lanes, as north-south traffic along it burgeoned. Meanwhile, bridges on I-95 through Richmond, one of the earliest pieces of interstate built in Virginia, were being rehabilitated.

Despite the increase in highway construction activity, highway congestion continued to be a major concern for citizens, especially in Northern Virginia and Hampton Roads. That concern often became a demand for more roads, built more quickly. In 1996, the General Assembly created the Commission on the Future of Transportation in Virginia to address ways of meeting the projected highway needs through the year 2015. Those needs involved projects some citizens considered vital and others considered optional, but together they totaled $34.7 billion, far more than the state had projected in revenues over that time period.

Shortly after taking office in 1998, Gov. Jim Gilmore appointed a Governor's Commission on Transportation Policy to study Virginia's present and future transportation needs. Subsequently, in August 1999, Gov. Gilmore unveiled a transportation plan called "Innovative Progress." Then, in the spring of 2000, the General Assembly passed much of the governor's plan into law, as well as its own transportation measures, in the Virginia Transportation Act of 2000. The act provided a new record-setting transportation budget of $3.2 billion for fiscal year 2001—an increase of 22 percent over the previous year's budget.

Legislators also stipulated in the act of 2000 that there would be three tiers of priorities for upcoming highway construction projects. Projects of first priority would be partially funded from what became known as the Priority Transportation Fund, a fund created under the act. It would draw funding from increased efficiencies in motor fuel tax collections, dedication of a portion of taxes paid on insurance premiums, and specified savings within VDOT.

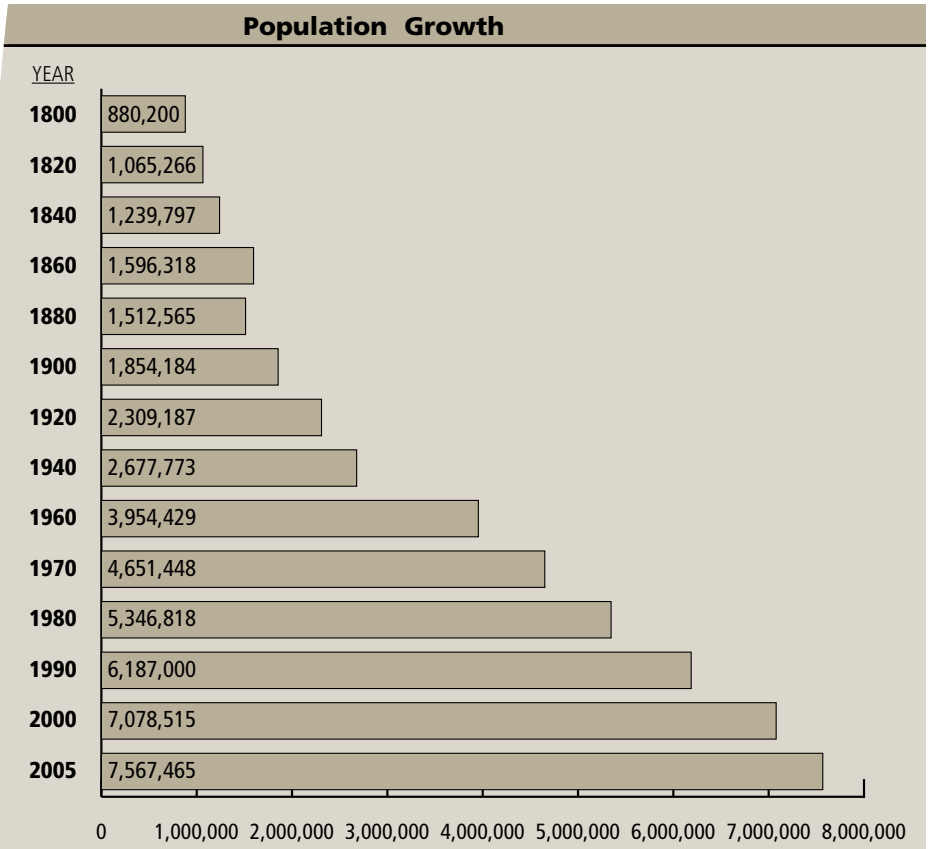
Among the priority projects listed were improvements to Route 58, construction of the Coalfields Expressway in Southwest Virginia, a third crossing for Hampton Roads waterways, and widening of I-81 through Virginia. Second in priority would be projects in the Six-Year Improvement Program to be financed in part with money from the state's General Fund. Third in priority would be other projects in the Six-Year Improvement Program, or those that would be added to it in the future.

'UNPRECEDENTED INVESTMENT' FOR TRANSPORTATION PROJECTS

At $136 million, the Pinners Point project was the largest road construction contract in Virginia's history when it was begun in 2002. It provides an interstate-type connection from Portsmouth's Western Freeway into the Portsmouth Marine Terminal and the Midtown Tunnel connecting Norfolk and Portsmouth.

Through the Virginia Transportation Act of 2000, legislators provided for about $3 billion in new money or accelerated financing for $10 billion worth of highway construction, public transportation, airports, and ports during the next six years. It was called *"an unprecedented investment in transportation in the commonwealth's history"* by Gov. Gilmore, and Commissioner Charles D. Nottingham, responding to the momentum of the bill, said, *"We will build roads as fast as the law allows and the money flow allows."*

In December 2000, Gov. Gilmore proposed a Transportation Reform Initiative to reduce the time required for completion of construction projects and to bring savings in the construction program of $140 million annually. In the proposal were 105 recommendations for best practices developed by the Governor's Commission on Transportation Policy. The recommendations included one to allow the CTB to enter into design-build contracts, which put one contractor in charge of an entire highway project rather than dividing responsibility for the project among many contractors under VDOT's supervision. The General Assembly was asked to pass into law several of these recommendations, and in 2001 did so, including one to allow counties to choose to reassume responsibilities for building or maintaining secondary roads within their boundaries.


Population Growth
YEAR
1800
880,200
1820
1,065,266
1840
1,239,797
1860
1,596,318
1880
1,512,565
1900
1,854,184
1920
2,309,187
1940
2,677,773
1960
3,954,429
1970
4,651,448
1980
5,346,818
1990
6,187,000
2000
7,078,515
2005
7,567,465
0
1,000,000
2,000,000
3,000,000
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6,000,000
7,000,000
8,000,000

UNEXPECTED SETBACKS COME IN THE NEW CENTURY

The Madison Heights Bypass through Amherst and Campbell counties draws traffic away from the crowded Route 29 corridor.

Even before taking office in 2002, Gov. Mark R. Warner expressed concern about financing and scheduling highway projects, as well as about cost overruns for new projects and inadequate budget projections to maintain the highway infrastructure. The construction program so dramatically enlarged just two years earlier by the previous administration and the General Assembly was being severely crimped by the downturn in the economy. Rosy revenue projections foreseen for transportation in late 2001 were realized as untenable in 2002. Project cost estimates did not adequately account for inflation and were significantly low. The available funding and the extensive improvements in the transportation system called for were recognized as incompatible.

The new governor called for a "realistic and achievable" Six-Year Program for transportation improvements and directed VDOT to produce it. Secretary of Transportation Whittington W. Clement, recently appointed by the governor, indicated a sharp reduction in the construction program was necessary, saying, "*We can't do it all, but whatever it is, we're going to do it well.*"

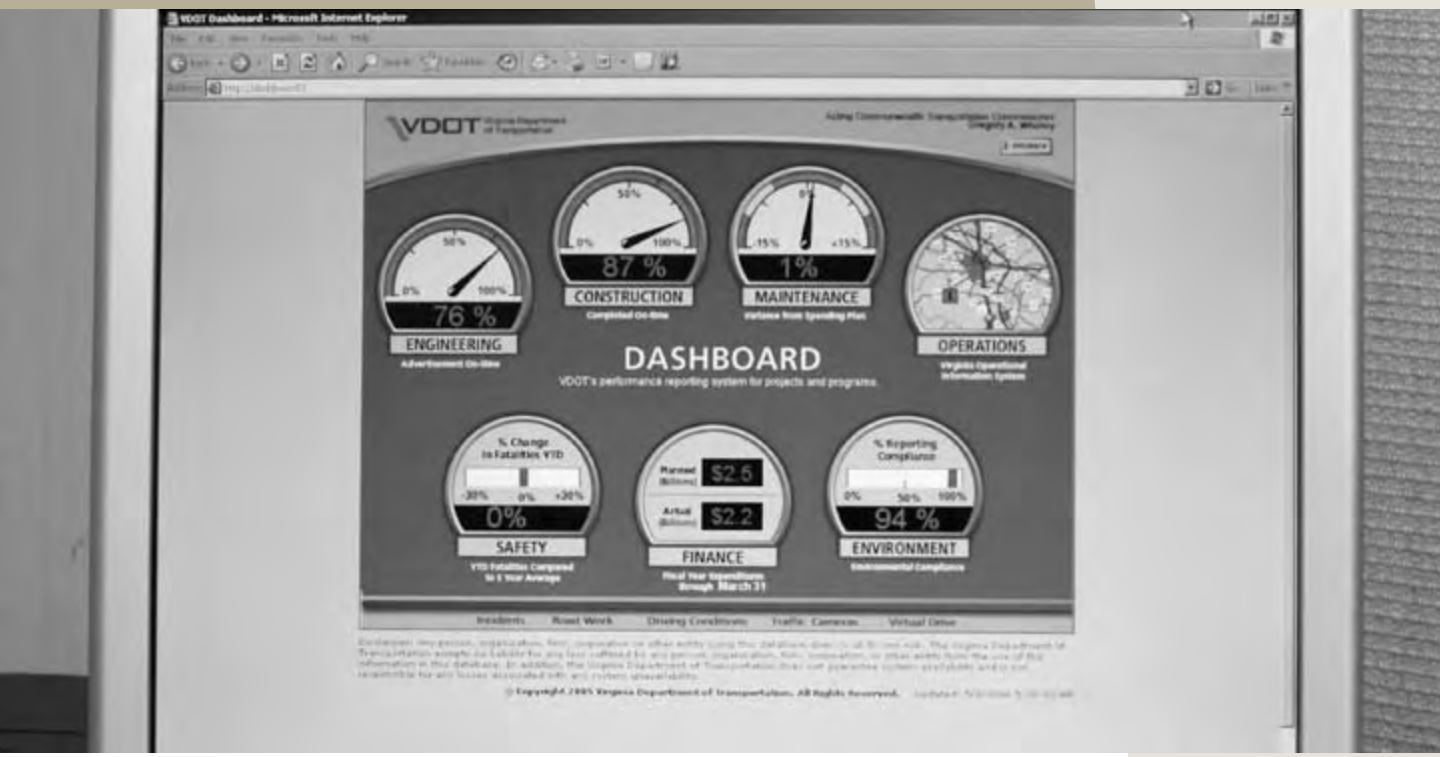
Gov. Warner also appointed a new commissioner of transportation, Philip A. Shucet, and within weeks he and VDOT staff prepared a Six-Year Program that reduced the previously approved program by nearly a third. At the same time, Virginia's aging highway system required more maintenance, further reducing available funding for new construction. Virginia, which long held "pay as you go" as its transportation funding philosophy, had to use Federal Reimbursement Anticipation Notes (FRANs), or special-use bonds, to help cover some construction projects' costs.

"No doubt, tough decisions are being made to deliver a transportation program that is truly credible and realistic," Secretary Clement said.

It appeared to be the beginning of an era of retrenchment, but at the same time, 1,157 projects across the state remained in the $7.3 billion Six-Year Program. And, simultaneously, motorists across Virginia rated highly the service they received from roads and highways, even in areas where traffic congestion was problematic.

The transportation theme of the new century, however, had been changed from spending and building to one of a realistic, credible, and systematic improvement process.

NEW WAYS OF DOING TRANSPORTATION BUSINESS



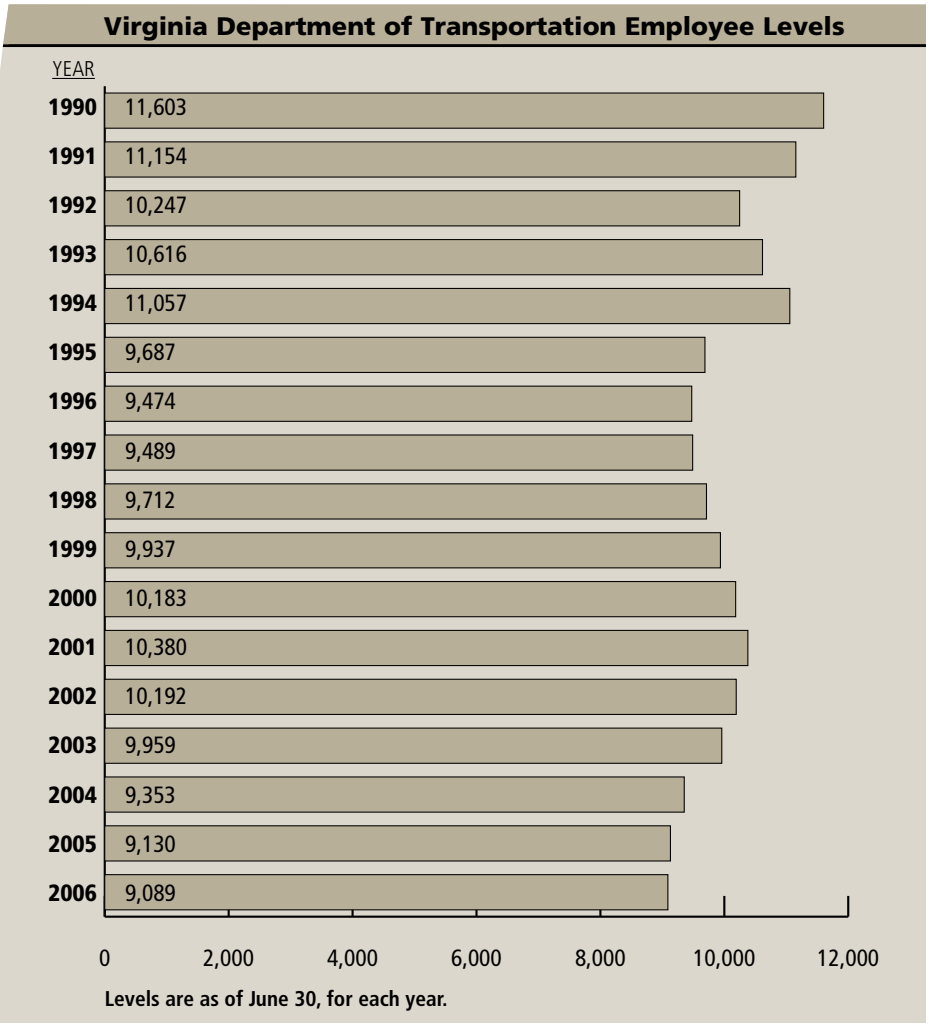
The "Dashboard" is an online system for VDOT managers to see in an instant which projects are on time and on budget. Pictured is "Dashboard II", an expanded version of the original system.

As the new century continued to unfold, national trends in the public sphere were readily apparent in Virginia. Citizens were seeking more involvement in transportation issues as well as a role in planning future initiatives. They also were demanding more accountability from government and more transparency with the public's business. Further, they thought government should do more with fewer resources.

Consequently, VDOT took some bold steps. One was an accountability system developed by employees in 2003 called the "Dashboard." The Web-based tool became an early warning system for construction project managers, showing them in an instant which projects were on track and which were falling behind or going over budget. Citizens were invited to view the Dashboard online and to communicate with managers about projects important to them. In 2005, "Dashboard II" was launched with additional information on highway operations, engineering, safety, finance and the environment.

Employees also designed a new system to estimate costs of future transportation projects. One of the first in the nation, the system addressed the department's tendency to underestimate project costs by an average of 187 percent—a margin reduced to 30 percent the first year of the system's use. In addition, the agency began running a cash flow analysis to ensure that money would be on hand for approved projects.

Project managers, with authority and accountability, were assigned to all projects, not just the larger ones. VDOT also increased its contingent of engineers with professional licensure from 182 to 270 between 2003 and 2005. Further, in a major cost-savings initiative, the number of employees was reduced by 1,400 between 2002 and 2004; as vacant positions went unfilled, employees picked up added duties and work was outsourced.


Virginia Department of Transportation Employee Levels
YEAR
1990 11,603
1991 11,154
1992 10,247
1993 10,616
1994 11,057
1995 9,687
1996 9,474
1997 9,489
1998 9,712
1999 9,937
2000 10,183
2001 10,380
2002 10,192
2003 9,959
2004 9,353
2005 9,130
2006 9,089
0
2,000
4,000
6,000
8,000
10,000
12,000
Levels are as of June 30, for each year.

MAJOR HIGHWAY PROJECTS IN NEW CENTURY

The new Woodrow Wilson Bridge across the Potomac River replaces the original bridge completed in 1961.

While new projects were fewer in the early 2000s, some major road projects continued. The reconstruction of the Springfield interchange for I-95, I-395 and I-495 in Northern Virginia required building 50 bridges and widening I-95 to 24 lanes on one segment. Another was replacing the aging Woodrow Wilson Bridge, which carries I-95 across the Potomac River, and reconstruction of 7.5 miles of approaches to it.

Completed in 2005, the Pinners Point Interchange, with a 1.5-mile bridge over the Elizabeth River, reduced traffic in the Port Norfolk neighborhood by 80 percent and provided a direct route to the Portsmouth Marine Terminal. The Lynchburg-Madison Heights Bypass, opened in 2006, provided an alternative to heavily congested Route 29 between Lynchburg and Amherst.

Widening Virginia's longest highway, Route 58, which stretches from the Atlantic Ocean to the southwest tip of the state, continued. The western loop around Richmond, Route 288, was completed in 2004, and economic development followed closely. Environmental enhancements, including underpasses for animals to safely cross the road, accompanied the relocation of Route 17 in Chesapeake completed in 2005.

The progress of highways in Virginia during the last century came at great human costs as well as monetary ones. Consequently, a VDOT Workers' Memorial was dedicated in 2004 to honor state highway workers who died of work-related causes. The memorial, supported entirely by donations from employees and many others, was built within a scenic pull-off on I-64 on Afton Mountain. Its centerpiece is a monument with names of more than 130 employees who have died since 1928.

NEW THINKING ABOUT MULTIMODALISM

In 2004, as important projects to move cars and trucks were being built, the CTB adopted a policy for integrating bicycle and pedestrian accommodations into the road-building decision-making process. Shortly thereafter, a comprehensive long-range multimodal transportation plan for the commonwealth was developed. Mandated by the General Assembly, the plan is called VTrans2025.

VDOT is committed to considering bicycling and walking as "fundamental travel modes" in its new policy.

State officials, technical experts, planners, federal officials and citizens conferred in producing the plan. Recommendations in it included additional funding for transportation, new technologies for congestion management, and greater compatibility of land use and transportation planning. VTrans2025 put special focus, however, on transportation projects that connect transit, pedestrian, bike and rail modes.

PERSISTENT PRESSURES ON THE INFRASTRUCTURE

Smart traffic centers play a major role in managing congestion and incidents on highways.

Relentless pressures mounted on the transportation system in the new century. Motorists' use of Virginia highways continued to grow rapidly — from 165 million miles traveled daily in 1990 to 220 million by 2005, an increase of 33 percent. Traffic congestion intensified accordingly. Virginia's transportation infrastructure also was aging, needing repairs and sometimes reconstruction. Because funding for improvements and maintenance was stretched thin, innovative measures were taken to get more out of the network and the dollars appropriated for it.

Virginia's Total Vehicle Miles Traveled

Year	Daily Vehicle Miles Traveled	Annual Vehicle Miles Traveled
1975	94,907,000	34,641,000,000
1985	131,310,000	47,928,000,000
1995	191,263,000	69,811,000,000
2005	220,096,000	80,335,040,000

There also was a new emphasis on operating highways more efficiently, moving traffic smoothly and clearing up traffic incidents swiftly. Smart traffic centers were built in Staunton and Salem similar to those in Northern Virginia, Hampton Roads and metro-Richmond. The state also was divided into five operational regions in which traffic controllers and engineers facilitated traffic flow along major corridors. For motorists who called 511 or visited the Internet site at 511va.org, real-time traffic information was available, enabling them to modify travel plans and avoid backups. And by 2005, motorists with Smart Tag or E-ZPass transponders could travel seamlessly along the East Coast without having to stop to pay tolls.

OUTSOURCING AND PRIVATIZATION BECOME KEY ORIENTATIONS

Virginia Maintenance Services was awarded contracts for maintenance and paving of many of Virginia's interstate lane miles.

When Gregory A. Whirley, VDOT inspector general, was named acting transportation commissioner in 2005, he noted the dramatic improvements VDOT and its contracting firms had made in delivering projects on time and within budget. In 2001, only 20 percent of construction projects were finished on time, but by 2006, 83 percent were. Similarly at the turn of the century, 51 percent of the contracts were built within budget, but by 2006 that figure rose to almost 88 percent. Despite this improvement, the commissioner advised employees that they were now competing with the public sector, which might want to perform more of the department's traditional functions.

The 2006 General Assembly reinforced that possibility by requiring the transportation commissioner to report annually on VDOT's efforts to outsource, privatize and downsize. This was in the context of the legislators' debate about how to finance the transportation system in the long term. Projections showed that by 2018, no state funds would be available for construction as the growing maintenance costs of an aging highway system siphoned off construction funds. The debate over new taxes for transportation continued throughout the spring of 2006, delaying approval of a new state budget by a record number of days.

SEEKING DIRECTION AT THE NATIONAL LEVEL

Highway Safety Corridors are established on high-crash stretches of Virginia's interstate.

At the national level, politicians and experts were debating the future direction of transportation policy. For almost four decades, it had been unified by a grand vision, the construction of the interstate highway system. As the last piece of that system was completed and that vision was realized, federal policy no longer had a riveting theme.

Not only that, ear-marking federal funds for particular state and local projects was diffusing the focus at the national level, as the 2005 federal transportation act demonstrated. The act, called SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) authorized spending on an unprecedented number of congressionally designated projects. However, it did focus strongly on safety, a new core program in the federal legislation. Under it, states were required to develop a strategic highway safety plan with goals for reducing highway fatalities and injuries. Virginia was already taking steps in that direction by establishing "Highway Safety Corridors" on high-crash stretches of interstate. In these corridors, state police enforced speed limits more aggressively and higher fines were imposed.

Planners also were asking complicated questions presented by transportation progress in recent decades, such as: How much did the interstate contribute to the break-up of communities? Do transportation projects create sprawl? Should population density of communities be created or changed to support public transit?

Practical problems emerged. An aging population continued to want mobility, in contrast to earlier generations of elderly; and the transportation system needed modification for their continued use. Global trade was expected to double in 20 years, with growing impact on the transportation network—especially in states like Virginia where traffic to major East Coast ports crowds streets and highways.

FINDING FUNDS FOR THE INFRASTRUCTURE

An Australian firm leased the Pocahontas Parkway in Richmond, which features highway–speed toll collection.

Funding for transportation was a dilemma for most states. On the one hand, construction and maintenance of infrastructure was increasingly expensive; on the other, citizens were agitated by the tax load already levied on them. Added to that was loss of revenue from the traditional tax on gasoline because of new fuel efficiencies and alternative fuels.

States asked whether transportation should be paid for as any other economic good or service — perhaps by mileage-based road-use charges. Toll roads were more often included in discussions of highway financing, and SAFETEA-LU provided tolling options for infrastructure improvements. Some states saw opportunities in privatization, selling some state transportation assets to private firms. Others were making good use of public-private arrangements.

Virginia worked diligently to involve private entities, including foreign investors, in transportation projects through its Public-Private Transportation Act. In 2005, an Australian bank acquired the Dulles Greenway in Northern Virginia, and in 2006, an Australian firm leased the Pocahontas Parkway south of Richmond for 99 years. Outsourcing of transportation services and operations continued to be a guiding principle, as it did across the nation.

FUNDAMENTAL QUESTIONS REMAIN TO BE ANSWERED

The future of transportation is not yet in focus.

The larger questions remained, however. How would multimodalism be incorporated into transportation networks? How would those networks serve a continually expanding global economy? Should changes in those networks redistribute populations and relocate business and residential centers? Would motorists' love of the open road continue to be paramount in the American psychology? Or would transportation be gradually reinvented?

In 2006, the transportation system managed by VDOT includes:

- nearly 57,866 miles of interstate, primary, secondary, and frontage roads;
- more than 11,820 bridges;
- four underwater tunnels in Hampton Roads;
- two mountain tunnels in Southwest Virginia;
- one toll road in Northern Virginia, one in central Virginia, and one in Southeast Virginia;
- five Smart Traffic Centers;
- 41 rest areas and 10 welcome centers; and
- approximately 107 commuter parking lots.

IN RETROSPECT

A century ago, transportation in Virginia was primitive. Today, for most motorists, it is safe and comfortable.

Virginia began the 20th century with no highway network, but rather with only a disjointed assortment of deeply rutted county roads. In 2006, a century after the State Highway Commission was established, the commonwealth could recount epic steps of progress in building transportation facilities to move millions of people and products every day. Well-engineered highways, smooth pavements, strong bridges and sophisticated traffic management systems were positioned on 57,866 miles of state-maintained roadways.

That expanding transportation infrastructure has contributed to the commonwealth's economic development and continuing prosperity throughout the decades, as well as to the safety and convenience of its citizens. To preserve that prosperous condition in the new century, continual diligence, innovation and foresight will be required.

A HISTORY OF THE COMMONWEALTH TRANSPORTATION BOARD

Since the Virginia Department of Transportation was established in 1906, 16 commissioners, 141 board members, eight transportation secretaries and 26 governors have held office. They brought the department through two world wars and the Great Depression of the 1930s. They weathered financially troubled times, introduced organizational reforms, withstood the uncertainty of federal support, and celebrated the development of each new road and each new transportation system.

Their goal was to build and maintain safe, efficient, convenient systems that would bolster the economy and make travel in Virginia a rewarding and pleasant experience. They were smart enough to reflect the times, recognizing that societal growth calls for flexibility, that tradition grows outdated, and that change is eternal.

There is not room to tell the hopes and dreams they must have cherished or the concern that must have accompanied their decision-making. But there is ample evidence in historical documents of an unsurpassed commitment toward promoting modern travel systems throughout the commonwealth. Through their aspirations, visionary leadership and courage, they helped shape a department that is one of the best in the nation. Here are the people who made it happen.

The Virginia Highway Commission was established by the General Assembly on March 6, 1906, under Chapter 73, Acts of Assembly, which read: *"An act to establish a State Highway Commission, to define its powers and duties; the term of office, salary and qualifications of the commissioner; to authorize the commissioner to call into consultation the professors of engineering in certain state institutions, and appropriating money to carry the provisions of this act into effect."* The commissioner was to be appointed by the governor.

Phillip St. Julien Wilson was appointed first highway commissioner for a term of six years, beginning July 1, 1906, and George P. Coleman was first assistant to the commissioner. The first staff consisted of a clerk, a stenographer and a draftsman.

The first commission had four members. Commission members, aside from the commissioner, were to be civil engineering professors chosen by the boards of visitors at three Virginia schools of engineering. In 1919, the General Assembly changed the law, expanding the commission from four to five members. The governor was to appoint the five members, with the advice and consent of the Senate. More importantly, members were to be private citizens chosen to represent major geographical regions of the state. The five geographical regions were the Piedmont, Southside, Southwest, Tidewater and Valley divisions.

The legislation said the commissioner would have *"general supervision of the construction and maintenance of roads in the state highway system (and) may recommend to the local road authorities…needed improvement in the public roads."* It further directed the commissioner to provide technical information and publish articles on road building and to present a biennial report to the governor giving an update on the department's accomplishments.

From 1920 to 1923, the commissioner did not serve as chairman, but after 1923, the commissioner served as chairman of the board in addition to his other duties.

In July 1942, the General Assembly again changed the format of the commission, expanding it from five to nine members. The commissioner was to serve as chairman of the commission, and

the other members were to come from eight highway districts established in 1922. The districts were Bristol, Culpeper, Fredericksburg, Lynchburg, Richmond, Salem, Staunton and Suffolk. Those districts already had district engineers.

In 1974, the structure of the commission was changed again, from nine to 11 members, adding an urban-at-large member and a rural-at-large member.

In 1984, the commission grew from 11 to 12 members, with the additional member to represent the new district of Northern Virginia.

In 1985, the commission's name was changed from the Virginia Highway and Transportation Commission to the Virginia Highway and Transportation Board.

In 1987, the board membership was expanded once more, from 12 to 15 members, when the number of at-large members was increased from two to five. At least two of the at-large members were to be from urban areas, and at least two from rural areas.

Also in 1987, the board's name was changed from the Virginia Highway and Transportation Board to the Commonwealth Transportation Board (CTB), and its duties were expanded. At that time, the board was given the additional responsibility of coordinating the planning for the financing of transportation needs, including the needs for highways, railways, seaports, airports, and public transportation.

In 1990, the General Assembly divided the office of the Secretary of Transportation and Public Safety into two separate secretariats, and designated the secretary of transportation as the chairman of the (CTB), with the department's commissioner to serve as vice chairman. The director of the Virginia Department of Rail and Public Transportation was added to the board as a non-voting member in 1999.

The board is primarily responsible for locating routes, letting construction contracts, creating traffic regulations, naming highways, gathering and tabulating information and statistics, entering into contracts with other states, and administering and allocating the Transportation Trust Fund.

GOVERNORS OF VIRGINIA - 1906-2006

Claude A. Swanson
1906-1910

William Hodges Mann
1910-1914

Henry Carter Stuart
1914-1918

Westmoreland Davis
1918-1922

E. Lee Trinkle
1922-1926

Harry F. Byrd
1926-1930

John Garland Pollard
1930-1934

George C. Peery
1934-1938

James H. Price
1938-1942

Colgate W. Darden Jr.
1942-1946

William M. Tuck
1946-1950

John Stewart Battle
1950-1954

Thomas B. Stanley
1954-1958

J. Lindsay Almond Jr.
1958-1962

Albertis S. Harrison Jr.
1962-1966

Mills E. Godwin Jr.
1966-1970

Linwood Holton
1970-1974

Mills E. Godwin Jr.
1974-1978

John N. Dalton
1978-1982

Charles S. Robb
1982-1986

Gerald L. Baliles
1986-1990

L. Douglas Wilder
1990-1994

George Allen
1994-1998

James S. Gilmore III
1998-2002

Mark R. Warner
2002-2006

Timothy M. Kaine
2006-

SECRETARIES OF TRANSPORTATION

Wayne A. Whitham
1972-1978

George M. Walters
1978- 1982

Andrew B. Fogarty
1982-1984

SECRETARIES OF TRANSPORTATION AND PUBLIC SAFETY

Franklin E. White
1984-1985

Andrew B. Fogarty
1985-1986

Vivian E. Watts
1986-1990

THE SECRETARIES AND CHAIRMEN

There were three secretaries of transportation who served from 1972-1984, and also three secretaries of transportation and public safety from 1984-1990, who did not serve as chairmen of the CTB. Biographical sketches are presented here of those who served as secretary of transportation and chairman of the CTB.

John G. Milliken (1990-1993)
John G. Milliken was the first Secretary of Transportation to serve as chairman of the CTB. He was appointed by Gov. L Douglas Wilder. He focused efforts on areas of the state with the worst traffic and worked to increase involvement of local governments in transportation issues. Congestion and related issues of energy conservation and clean air were of central concern to Milliken.

Milliken worked to ensure Virginia would receive a fair and equitable share of federal funds under a sweeping overhaul of transportation legislation being considered by Congress in 1990 and 1991. Implementing that legislation, the federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), was one of Milliken's major tasks.

Milliken also persuaded the General Assembly that VDOT's Rail and Public Transportation Division should be a separate agency, putting public transit on an equal organizational footing with highways. A 1970 graduate of the University of Virginia law school, he practiced law in Washington, D.C. before taking the position as secretary; he had been a member of the Arlington County Board of Supervisors for 10 years, twice serving as chairman. He also served on the Washington Metropolitan Area Transit Authority's Board of Directors, the National Capital Interstate Air Quality Commission and the Northern Virginia Transportation Commission.

Robert E. Martínez (1994-1998)
Robert E. Martínez was appointed secretary in 1994 by Gov. George Allen.

While secretary, Martínez spearheaded efforts to build the new Woodrow Wilson Bridge in Northern Virginia.

Just before he became secretary he was manager of strategic planning at Norfolk Southern Corp., starting there in 1993. From 1992 to 1993 he was associate deputy secretary at the U.S. Department of Transportation, where he established the agency's Office of Intermodalism.

Before that, he was deputy administrator of the federal transportation department's maritime administration from 1990 to 1992. Martínez also served as assistant executive director of the Business Roundtable in New York City from 1984 to 1990, and worked as a consultant.

After Gov. Allen's term, Martínez returned to Norfolk Southern Corp. as a vice president. He also served on the advisory board of the U.S. Merchant Marine Academy.

Martínez earned his bachelor's in history and Spanish from Columbia University. He received his master's in international relations and his doctorate in political science from Yale University.

Shirley J. Ybarra (1998-2002)
Shirley J. Ybarra was appointed secretary in 1998 by Gov. James S. Gilmore III.

As secretary, she worked with the legislature and private entities to develop creative approaches to financing transportation projects, including initiating the Pocahontas Parkway project.

She had been deputy secretary of transportation, appointed in 1994 by Gov. George Allen.

Ybarra was previously executive vice president of Stateside Associates, a consulting group in Arlington, from 1991 to 1993. She was also president of the Americas for ABC International in Boston from 1987 to 1990.

She worked as a senior policy advisor in the U.S. Department of Transportation from 1983 to 1987. She was also vice president at Simat, Helliesen & Eichner, Inc., an air transportation consulting company in New York City, from 1971 until 1983.

Ybarra was a consultant to Peat, Marwick, Mitchell & Co. in California from 1968 to 1971.

After leaving state government, she formed The Ybarra Group, a transportation consulting company in Washington, D.C., and served as executive director of The Coalition for Innovative Transportation Solutions.

Ybarra received her bachelor's degree in business administration and her master's in economics from the University of Nebraska-Lincoln.

Whittington W. Clement (2002-2005)
Whittington W. "Whitt" Clement became secretary in 2002, appointed by Gov. Mark Warner.

As secretary, Clement helped find innovative solutions to Virginia's transportation challenges, including enhanced rail and mass transit options, airport improvements, and the use of public-private partnerships to build some critical highway projects. He also concentrated efforts on multimodalism, spearheading the VTrans2025 plan.

Clement previously was a member of the Virginia House of Delegates, representing Danville and part of Pittsylvania County for 14 years. While there, he was on the transportation and appropriations committees, and chaired the appropriations subcommittee on transportation.

After leaving the cabinet in 2005, he rejoined the law firm Hunton & Williams as a partner. Clement was also previously with the law firm Clement & Wheatley. He served as president of the Virginia Bar Association in 1993.

He was appointed to the State Council for Higher Education for Virginia in 2005. He also served on the Commission on the Future of Transportation and the Commission on the Future of Higher Education.

Clement was a past chairman and is a member of the Averett University Board of Trustees. Additionally, he serves on the Board of Managers of University of Virginia Alumni Association. He earned both his undergraduate and law degrees at that school.

Pierce Homer (2005-)

Pierce Homer was appointed acting secretary by Gov. Mark Warner in 2005 and secretary by Gov. Tim Kaine in 2006.

As secretary, Homer has worked closely with Gov. Kaine and his transportation plan, seeking better planning, greater accountability and responsible investments.

Before his appointment to the post, Homer was deputy secretary of transportation, starting in 2002. He previously was deputy county executive for Prince William County from 1987 to 2002.

He also worked in local governments and as a local government consultant in Texas and Virginia. Homer earned his bachelor's degree from Haverford College in Haverford, Pa., and his master's in public affairs from the University of Texas at Austin.

THE COMMISSIONERS

Commissioners served as Chairman of the Highway Commission (later the Commonwealth Transportation Board) until 1990, when they began serving as vice chairman.

Phillip St. Julien Wilson (1906-1913)
Phillip St. Julien Wilson was appointed commissioner by Gov. Claude A. Swanson in 1906. As the first commissioner, he was in charge of a fledgling state agency that was searching for ways to improve Virginia's roads. The most comfortable means of travel was still by boat and train.

Although localities were responsible for road improvements, the agency provided civil engineering advice and prepared plans and specifications for projects. Wilson encouraged local leaders to work toward a coordinated, statewide highway system, and strove to get the public to see the necessity of improving roads.

Wilson graduated from Virginia Military Institute in 1886 and served in the Spanish-American War. He had a general engineering practice in Richmond, and was assistant city engineer there before joining the department.

He resigned in 1913 to become chief engineer of the U.S. Office of Public Roads, serving there until his death in 1936.

George P. Coleman (1913-1923)
George P. Coleman, who had been assistant commissioner since 1906, was promoted to commissioner by Gov. William Hodges Mann in 1913.

He organized the American Association of State Highway Officials to help develop national highways, serving as chairman of a committee that prepared the first federal-aid bill for road development. He also organized the Virginia Road Builders Association.

In 1918, he and other leaders convinced the General Assembly to establish an integrated highway system.

Coleman graduated from the College of William and Mary. He did engineering work in Mississippi, Georgia, West Virginia and Minnesota before becoming city engineer of Winona, Minn., a position he held from 1901 to 1906.

After leaving the department, Coleman was president of Peninsula Bank and Trust Company and mayor of Williamsburg. He died in 1948. The bridge over the York River between Yorktown and Gloucester Point is named after him.

Henry G. Shirley (1923-1941)
Henry G. Shirley was first appointed by Gov. E. Lee Trinkle and also served under Govs. Harry F. Byrd, John Garland Pollard, George C. Peery and James H. Price. He saw the need for an advanced highway plan leading through the Virginia suburbs to Washington, D.C., and under his direction, work began on the first limited access road in the state.

Now known as the Henry G. Shirley Memorial Highway, the road, which is part of 1-95 and 1-395, extends from Route 1 in Northern Virginia to the 14th Street Bridge in Washington, D.C. Shirley held a position as professor of military science at Homer Military School in Oxford, N.C. After serving in the Spanish-American War, he worked for the New York Central and Hudson River Railroad and other railroad companies and served with the engineering department of the District

of Columbia. He was roads engineer for Baltimore County, Md., and chief engineer of the Maryland State Roads Commission.

During World War I, he served on the Highway Transport Committee, Council of National Defense, helping keep the roads of the nation in shape to handle military traffic.

In 1918, he was named executive secretary of the Federal Highway Council, and in 1920 served once more as engineer of Baltimore County.

A native of Locust Grove, W.Va., he graduated from Virginia Military Institute in 1896 with a civil engineering degree and later from the University of Maryland with a doctor of science degree. He died in office in 1941.

James A. Anderson (1941-1957)
Brig. Gen. James A. Anderson was appointed by Gov. James H. Price to fulfill the unexpired term of Henry G. Shirley, who had died. Under Anderson's direction, the George P. Coleman Bridge, the Rappahannock Bridge, and the Hampton Roads Bridge-Tunnel were built, and 12,000 miles of secondary road were hard-surfaced.

Anderson organized the first state highway conference, which was held each year at Lexington in conjunction with Virginia Military Institute (VMI). He initiated the Transportation Research Council at the University of Virginia, a joint venture between the department and the university. He also organized the department's graduate engineer training program.

He emphasized the construction of safety features in primary highways and the development of secondary roads to all-weather standards.

A native of Linden in Warren County, he graduated in 1913 with first honors from VMI, winning the Jackson-Hope medal, VMI's top scholastic award. He joined the VMI faculty, served as a lieutenant-colonel during World War I, and returned to VMI, where he remained until his appointment in 1933 as state engineer and state director of the United States Public Works Administration.

He was named VMI dean of faculty in 1937, a position that carried with it a commission of brigadier general in the Virginia State Guard. He died in 1964. Route 60 between Richmond and Lexington is named for him.

Samuel D. May (1958-1960)
Samuel D. May was appointed by Gov. J. Lindsay Almond Jr. A businessman from Bluefield, he had served as a member of the Virginia Highway Commission since 1953, representing the Bristol District.

May was known to be a calm and deliberate leader, closely examining a problem before reaching a decision. He oversaw a $200 million budget in state and federal funds at the department.

He left the University of Virginia after attending for two years to go to work in a Tazewell hardware store. In 1917, he joined the Bluefield Hardware Company, a wholesale company operating in several states. One year later, he enlisted in the Army, and on his return to civilian life the following year, he rejoined the Bluefield Hardware Company. In 1945, he became president and chairman of the board, a position he held when he was appointed commissioner.

In Bluefield, he also was a director of First National Bank and the Flat Top Insurance Agency and served as president of the Wholesale Hardware Association. In 1954, he was appointed chairman of the Old Dominion Turnpike Authority, which had been set up to build a north-south toll road across southwest Virginia. The project was later scrapped.

A native of Tazewell County, May died in office in 1960.

Howard H. Harris (1960-1963)

Howard H. Harris was appointed by Gov. J. Lindsay Almond Jr. to fulfill the unexpired term of Samuel D. May, who had died. Harris, a 40-year department veteran, retired three years later due to illness.

Harris joined the department as a rodman. After filling various posts, he was promoted to resident engineer, serving in that capacity in Hillsville, Salem and Wytheville.

In April 1945, he came to the central office as assistant maintenance engineer. He became maintenance engineer in 1951 and three years later was named assistant chief in charge of the construction maintenance, secondary roads and landscape divisions. In 1959, he was appointed administrative assistant, assisting the commissioner in departmental matters, handling the allocation of highway funds, and heading the department's information program.

A native of South Boston, he was a certified professional engineer and held membership in several highway organizations. He served as chairman of the Elizabeth River Tunnel Commission, on the Governor's Highway Safety Committee, as a member of the American Association of State Highway Officials, and with the American Society of Civil Engineers. He died in 1967.

Francis A. Davis (1957, 1963-1964)

Francis A. Davis was appointed acting commissioner by Gov. Thomas B. Stanley to serve the remainder of James A. Anderson's term when Anderson retired. He was appointed acting commissioner by Gov. Albertis S. Harrison Jr. to serve from November 1963, when Howard H. Harris retired, until February 1964, when Douglas B. Fugate was appointed to the post.

His career with the department began in 1919 after he had completed three years of pre-engineering studies at the College of William and Mary. Starting as a rodman, he was a construction inspector in the Bristol and Lynchburg districts from 1920 to 1924, and from 1924 to 1936 served as resident engineer at Amherst and Warrenton.

In 1936, he was promoted to district engineer at Salem, a position he held until 1944 when he was named personnel engineer for the department. Four years later, he became purchasing agent, and in 1955 he was appointed chief engineer and deputy commissioner. He served as president of the Southeastern Association of State Highway Officials and on three committees of the American Association of State Highway Officials (AASH0).

A native of Cumberland, he also served as a member of the AASHO-Associated General Contractors joint cooperative committee and the AASHO-American Road Builders Association joint cooperative committee. He died in 1966.

Douglas B. Fugate (1964-1976)
Douglas B. Fugate was appointed by Gov. Albertis S. Harrison Jr. to fulfill the unexpired term of Howard H. Harris, who had retired. He was primarily responsible for developing Virginia's four-lane arterial road system and for helping establish the state's interstate system. He also pioneered the experimental use of rush-hour bus lanes on the Shirley Highway in Northern Virginia. He was one of the early transportation leaders interested in protecting the environment.

He joined the department in 1927, working on a survey crew and serving as a construction inspector until 1936, when he became Sandston resident engineer. He left the department in 1942 to join the Army and helped build airfields for the Army Corps of Engineers during World War II. He returned to the department in 1946 to become director of toll facilities in Tidewater.

In 1956, he was named assistant chief engineer to coordinate planning for the interstate system, a position he held when Gov. Harrison appointed him commissioner. He was reappointed by Gov. Mills E. Godwin Jr. in 1966 and by Gov. Linwood Holton in 1970. In 1974, Gov. Godwin, in his second administration, appointed him to the post once more.

He was president of the American Association of State Highway and Transportation Officials. He retired in 1976.

A native of Reed Island in Pulaski County, he grew up in Radford. He graduated from Virginia Military Institute in 1927. He died in 1988.

John E. Harwood (1976-1978)
John E. Harwood was appointed by Gov. Mills E. Godwin Jr. to fulfill the unexpired term of Douglas B. Fugate. He was with the department for 43 years.

In 1935, after a stint surveying Jamestown Island for the National Park Service, Harwood joined the department as a junior draftsman at the central office. He found that he liked highway work and began reading surveying books and taking night courses in engineering. After serving with the Army in the Philippines during World War II, he returned to work in the location and design division. By 1954, he was assistant state location and design engineer and three years later was head of the division, the department's largest.

In that position, he directed studies that led to the selection of locations and the preparation of detailed plans for much of the state's interstate system. He is considered one of the architects of that system.

He became assistant chief engineer in 1964 and later that year was appointed director of programming and planning. He was named deputy commissioner and chief engineer in 1965. Gov. John N. Dalton reappointed Harwood commissioner in 1978, but Harwood decided instead to retire.

A native of Asheville, N.C., he attended the College of William and Mary. He died in 1990.

Harold C. King (1978-1986)
Harold C. King was appointed by Gov. John N. Dalton. He is credited with helping the department through financially rough times.

King was known for his "practice-what you-preach" attitude and for his realistic approach to transportation problems. He rode a bus to work after he became commissioner to promote the idea of public transportation.

He strongly supported energy conservation, making sure road maintenance crews followed the governor's mandate to cut fuel consumption, although they were exempt. Before he was named commissioner, he served for eight years as division administrator in charge of Federal Highway Administration (FHWA) programs in Virginia.

A native of Plattsburgh, N.Y., he began his transportation career in 1947 with the New York State Department of Public Works, serving as design engineer, bridge engineer, project engineer and construction engineer. He came to Richmond in 1961 as district engineer for the U.S. Bureau of Public Roads and stayed five years. In Washington, D.C., he helped develop environmental standards for the FHWA before returning to Richmond in 1970. He served as president of the Southeastern Association of State Highway and Transportation Officials.

He was reappointed by Gov. Charles S. Robb in 1982 and left the department in 1986. He now is a consultant based in Richmond.

Ray D. Pethtel (1986-1994, 2002)
Ray D. Pethtel was appointed by Gov. Gerald L. Baliles. He was given the responsibility to help promote and carry out the governor's new emphasis on transportation. His job was to implement the largest construction program in the history of the department, make sweeping management changes, and chair a revitalized CTB.

Pethtel led the department into the national limelight as he developed a number of progressive, innovative programs. He expanded communications with the public and other client groups; expedited planning and construction of roads; focused attention on departmental productivity; and decentralized operations, giving more responsibility and authority to the districts.

Pethtel placed a major emphasis on human resource programs; intensified training for technical and managerial skills; had each division establish goals and objectives; got employees more involved in planning processes; established specific employee recognition practices; and promoted good work habits contained in a list of employee "shared values." His organizational enhancements focused heavily on employee involvement and empowerment.

He was reappointed by Gov. L. Douglas Wilder in 1990 and left the department in 1994. He was appointed University Transportation Fellow at Virginia Tech in 1994. In 2002, Gov. Mark Warner reappointed Pethtel to serve as acting commissioner for four months during a national search for a new commissioner.

Born in Ohio, Pethtel grew up in Pennsylvania, receiving his bachelor's and master's degrees from Pennsylvania State University. Today, he is University Transportation Fellow associate director at Virginia Tech Transportation Institute. He's also the director for the Center for Transportation Policy.

David R. Gehr (1994-1999)
David R. Gehr was appointed by Gov. George Allen. One of his top priorities was to continue aggressively pursuing transportation technologies that would put Virginia in the nation's forefront of improving traffic mobility and safety.

Other top priorities included improving customer service, increasing the department's focus on strategic planning, continuing to expand employee involvement in the problem-solving and decision-making processes, and ensuring continuous quality improvement throughout the department.

He was described as a rare combination of engineer and diplomat: a skilled road builder who understood the needs of transportation workers, as well as a personable, "big picture" official who could appreciate the concerns of political leaders and the public. Under his leadership, citizens' opinions were a guiding factor in shaping the department's planning and decision-making. He was a strong advocate for "smart highway" technology and served as a member of the Intelligent Vehicle Highway Society (IVHS) of America, which promoted and coordinated public/private partnerships for advancing technology techniques to move traffic more safely and efficiently.

After a brief stint with the Connecticut Highway Department and completing his military service, he joined the department in 1971 as a highway engineer trainee. He held positions as Fredericksburg district traffic engineer, assistant division administrator and Northern Virginia district engineer, where he was responsible for implementing High Occupancy Vehicle (HOV) lanes on Interstate 66 and improving the use of HOV lanes on 1-395 and 1-95.

Born in Rochester, NY, he graduated from Virginia Military Institute in 1968 with a B.S. in civil engineering.

Gehr left the agency is 1999, and is now a consultant based in Northern Virginia.

Charles. D. Nottingham (1999-2002)
Charles D. "Chip" Nottingham was appointed commissioner by Gov. Jim Gilmore in November 1999 after having served as acting commissioner since August of that year. He had been assistant secretary of transportation since 1998.

While Nottingham was commissioner, the General Assembly passed the Virginia Transportation Act of 2000, setting priorities for construction of transportation projects and providing $3 billion in new money to accelerate construction of projects in a $10.1 billion Six-Year Program. Also under Nottingham's watch, the first 1.7-mile section of the Smart Road and the two-mile Smart Road Bridge opened for research and testing.

Nottingham previously worked for American International Group, the Washington, D.C., law firm of Powell, Goldstein, Frazer and Murphy, and the U.S. Department of Justice. He served as counsel and chief of staff for U.S. Rep. Tom Davis, as well as chief of staff and senior policy advisor for U.S. Rep. Bob Goodlatte. He worked for the Federal Highway Administration from 2002-2006.

He is a graduate of Wesleyan University and George Mason University School of Law. He left the agency in 2002 and is now chairman of the federal Surface Transportation Board.

Philip A. Shucet (2002-2005)
Philip A. Shucet was appointed commissioner by Gov. Mark Warner in April 2002.

Shucet gained national recognition for holding the agency accountable to taxpayers. Under his watch, employees built the Dashboard, a nationally recognized tracking tool for project managers. Consequently, VDOT dramatically improved its performance delivering more projects on time and on budget.

Shucet also made VDOT the most transparent agency in Virginia. Through the Dashboard, the public has online access to the latest status of VDOT's projects and programs.

Before coming to VDOT, Shucet was an executive vice president of a global engineering and energy management company. He previously held key leadership positions with the Arizona Department of Transportation from 1984 through 1988, and the West Virginia Department of Transportation from 1972 to 1984.

Shucet is a graduate of Virginia Polytechnic Institute and State University and attended West Virginia College of Graduate Studies. Shucet left VDOT in 2005 and is now president of a residential home building company based in Virginia Beach.

Gregory A. Whirley (2005-2006)
Gregory A. Whirley was named acting commissioner by Gov. Mark Warner in July 2005, moving up from the post of inspector general of the Virginia Department of Transportation, a position he had held since September 2000.

Whirley, a certified public accountant, directed VDOT's fiscal division, managed external audits and was controller of financial operations before becoming inspector general.

He joined the agency in 1988. Whirley began his career with Arthur Andersen & Co. and previously was controller for the National Mental Health Association and the National Governor's Association. He is a graduate of Virginia State University.

In September 2006, he was named chief deputy commissioner when David S. Ekern, P.E., was appointed commissioner.

David S. Ekern, P.E. (2006-)
David S. Ekern, P.E., was appointed commissioner by Gov. Timothy Kaine in September 2006. He had been director of the Idaho Transportation Department since July 2003. Before that, he served 33 years with the Minnesota Department of Transportation as assistant commissioner, assistant chief engineer, and as a district engineer. He also held positions in Environmental Policy, Project Development, Planning, and Operations.

From 2001-2003 he was on assignment to the American Association of State Highway and Transportation Officials (AASHTO). In that role, he focused on initiatives and policy development that are changing the face of our nation's transportation agencies.

He is a member of numerous professional associations and societies and has earned the standing of Fellow in the American Society of Civil Engineers. Ekern received his bachelor of science degree in civil engineering from the University of Minnesota and his master's in business administration from the University of St. Thomas.

BOARD MEMBERS

Col. T.A. Jones
Lexington
Professor of Civil Engineering at Virginia Military Institute
1906-1919

Col. R.A. Marr
Blacksburg
Dean of engineering at Virginia Agricultural and Mechanical College and Polytechnic Institute
1906-1912

William M. Thornton
Charlottesville
Dean of engineering at the University of Virginia
1906-1919

Col. Robert Burns Haldane Begg
Blacksburg
Dean of engineering at Virginia Agricultural and Mechanical College and Polytechnic Institute
1912-1919

Henry P. Beck
Richmond
Tidewater Division
1919-1922

Frank W. Davie
Lawrenceville
Southside Division
1919-1922

Horace Hardaway
St. Paul
Southwest Division
1919-1922

Wade H. Massie
Rappahannock
Piedmont Division
1919-1941

James A. Mundy
Natural Bridge
Valley Division
1919-1921

James A. Bear
Roanoke
Valley Division
1921-1922

R.K. Sanders
Saltville
Southwest Division
1922-1924

Hugh B. Sproul
Staunton
Valley Division
1922-1929

I. Walke Truxtun
Norfolk Tidewater Division
1922-1933

A.J. Huff
Fleet
Southwest Division
1924-1926

Henry G. Gilmer
Wise
Southwest Division
1926-1934

William H. East
Staunton
Valley Division
1929-1938

Sol Waite Rawls
Franklin
Tidewater Division and Suffolk District
1933-1961

J.F. Wysor
Pulaski
Southwest Division and Salem District
1934-1954

Kenneth N. Gilpin
Bryce
Valley Division and Staunton District
1938-1946

Lee Long
Dante
Southwest Division
1941-1942

Howard C. Rogers
Hamilton
Culpeper District
1941-1942, 1946-1957

E.P. Barrow
Lawrenceville
Richmond District
1942-1962

George P. DeHardit
Gloucester
Fredericksburg District
1942-1954

Emmett H. Poindexter
Fredericks Hall
Culpeper District
1942-1945

A.D. Starling
Danville
Lynchburg District
1942-1945

J.B. Wampler
Big Stone Gap
Bristol District
1942-1952

W.R. Harrison
Danville
Lynchburg District
1946-1949

Joseph P. Harpine
Broadway
Staunton District
1947-1951

Tucker Carrington Watkins Jr.
South Boston
Lynchburg District
1950-1963

Senator Burgess Ernest Nelson
Mt. Jackson
Staunton District
1951-1964

Samuel D. May
Tazewell
Bristol District
1953-1958

S. Sutton Flythe
Martinsville
Salem District
1954-1965

William A. Wright
Tappahannock
Fredericksburg District
1954-1958

G. Wallace Carper
Fairfax
Culpeper District
1957-1962

Walter Neal Chinn Jr.
Westmoreland
Fredericksburg District
1958-1962

William Morton Sclater Jr.
Marion
Bristol District
1958-1968

William Ransdell Chilton
Lancaster
Fredericksburg District
1962-1970

Richard S. Holland
Norfolk
Suffolk District
1962-1967

George Clay Landrith
Alexandria
Culpeper District
1962-1970

Judge Robert Samuel Weaver Jr.
Victoria
Richmond District
1962-1971

Lawrence H. McWane
Lynchburg
Lynchburg District
1963-1968

George Lowell Baughan
Luray
Staunton District
1964-1972

Earl Abbath Fitzpatrick
Roanoke
Salem District
1965-1973

W. Fred Duckworth
Norfolk
Suffolk District
1967-1972

Thomas Reakirt Glass
Lynchburg
Lynchburg District
1969-1979

Rufus Thomas Hairston
Bristol
Bristol District
1969-1972

LeRoy Eakin Jr.
McLean
Culpeper District
1970-1974

Douglas G. Janney
Fredericksburg
Fredericksburg District
1970-1977

Morrill M. Crowe
Richmond
Richmond District
1971-1979

Leonard R. Hall
Norton
Bristol District
1972-1980

Robert Samuel Landes
Staunton
Staunton District
1972-1980

William T. Roos
Yorktown
Suffolk District
1972-1981

Horace G. Fralin
Roanoke
Salem District
1973-1981

Ralph A. Beeton
Alexandria
Culpeper District
1974-1977

T. Ray Hassell III
Chesapeake
Urban-at-large
1974-1981

Charles S. Hooper, Jr.
Crewe
Rural-at-large
1974-1982

William T. Robinson
West Point
Fredericksburg District
1977-1982

William B. Wrench
Springfield
Culpeper District
1978-1981

William E. Anderson
Danville
Lynchburg District
1979-1980

William F. Mohr
Richmond
Richmond District
1979-1982

Eugene M. Bane
Grundy
Bristol District
1980-1983

H. Delmer Robinson Jr.
Winchester
Staunton District
1980-1982

Dr. William Randolph Watkins
South Boston
Lynchburg District
1980-1983

Richard George Brydges
Virginia Beach
Suffolk District
1981-1985

J. Carlton Clore
Culpeper
Culpeper District
1981-1982

James C. Hughes
Annandale
Urban-at-large
1981-1982

T. George Vaughan Jr.
Galax
Salem District
1981-1985

Joseph Michael Guiffre
Alexandria
Northern Virginia District
1982-1988

H.R. Humphreys, Jr.
Kilmarnock
Fredericksburg District
1982-1990

Robert A. Quicke
Blackstone
Rural-at-large
1982-1990

Robert W. Smalley
Berryville
Staunton District
1982-1992

T. Eugene Smith
McLean
Urban-at-large
1982-1985

James L. Davidson Jr.
Lynchburg
Lynchburg District
1983-1990

Dr. William M.T. Forrester
Richmond
Richmond District
1983-1985

Edgar Bacon
Jonesville
Bristol District
1984-1992

Constance R. Kincheloe
Culpeper
Culpeper District
1984-1994

Dr. M. Philmore Howlette
Richmond
Richmond District
1985-1995

C. Roger Malbon
Virginia Beach
Suffolk District
1985-1993

Stephen A. Musselwhite
Vinton
Salem District
1985-1993

Herbert V. Kelly Sr.
Newport News
Urban-at-large
1986-1990

Donald S. Beyer Jr.
Falls Church
Urban-at-large
1987-1990

Joseph A. Leafe
Norfolk
Urban-at-large
1987-1990

Dr. Daphyne Saunders Thomas
Harrisonburg
Rural-at-large
1987-1992
Staunton District
1992-1996

Byron E. Waldman
Alexandria
Northern Virginia District
1988-1995

Vincent J. Mastracco Jr.
Norfolk
Urban-at-large
1990-1993
Suffolk District
1993-1994

Mark R. Warner
Alexandria
Urban-at-large
1990-1994

James K. Candler
Lynchburg
Lynchburg District
1990-1994

Lawrence A. Davies
Fredericksburg
Fredericksburg District
1990-1994

Daniel A. Hoffler
Chesapeake
Urban-at-large
1990-1992

G. Morris Wells Jr.
South Hill
Rural-at-large
1990-1994

Mrs. Gary W. Brooks
Merry Point
Rural-at-large
1992-1996

Laura Ross Miller
Alexandria
Urban-at-large
1992-1994

Joseph Albert Rhea Jr.
Damascus
Bristol District
1992-1996

Alan I. Kay
McLean
Urban-at-large
1993-1994

Robert A. Williams
Martinsville
Salem District
1993-1994

Thomas A. Barton Jr.
Virginia Beach
Suffolk District
1994-1995

Roy Parrish Byrd
Chatham
Lynchburg District
1994-2002

Lorinda G. Lionberger
Roanoke
Salem District
1994-2002

H. Carter Myers III
Charlottesville
Urban-at-large
1994-1998
Culpeper District
1999-2002

Zeanious L. Newcomb
Fredericksburg
Fredericksburg District
1994-1998

Max B. Porter
Boykins
Rural-at-large
1994-2000

James Edward Rich
Middleburg
Urban-at-large
1994-1998

William Seabirt Roudabush
Charlottesville
Culpeper District
1994-1998

Ulysses X. White
Manassas
Urban-at-large
1994-2002

John V. Cogbill III
Richmond
Richmond District
1995-1999

Robert T. Lee
Fairfax County
Northern Virginia District
1995-1998

William W. Prettyman
Virginia Beach
Suffolk District
1995-2001

John H. Grubb Jr.
Marion
Rural-at-large
1996-2002

L. C. "Sonny" Martin
Pennington Gap
Bristol District
1996-2002

Harold E. Neale
Staunton
Staunton District
1996-1998

S. Grey Folkes Jr.
Chesapeake
Urban-at-large
1998-2002

Benjamin R. Humphreys Jr.
White Stone
Fredericksburg District
1998-2002

J. Kenneth Klinge
Alexandria
Northern Virginia District
1998-2004

Leonard S. "Hobie" Mitchel
Lansdowne
Urban-at-large
1998, 1999-2005

Kevin M. Sabo
Burke
Urban-at-large
1998-1999

Olivia A. Welsh
Staunton
Staunton District
1998-2002

Bryan E. Kornblau
Richmond
Richmond District
1999-2002

Helen E. Dragas
Virginia Beach
Urban-at-large
2002-2006

Ambrose W. Bailey
Fredericksburg
Fredericksburg District
2002-2005

Gary D. Walker
Charlotte Court House
Rural-at-large
2000-2002

Edward S. Garcia
Virginia Beach
Hampton Roads District
2001-2002

John J. "Butch" Davies
Culpeper
Culpeper District
2002-

Kenneth Spencer White
Lynchburg
Lynchburg District
2002-

Harry T. Lester
Virginia Beach
Hampton Roads District
2002-2005

James Lee Keen
Vansant
Rural-at-large
2002-

Gerald P. McCarthy
Richmond
Richmond District
2002-

Onzlee Ware
Roanoke
Salem District
2002-2003

Hunter R. Watson
Farmville
Rural-at-large
2002-2006

Dr. Phillip C. Stone
Bridgewater
Staunton District
2002-2005

Julia A. Connally
Arlington
Urban-at-large
2002-

James D. Bowie
Bristol
Bristol District
2002-

Dana M. Martin
Roanoke
Salem District
2003-

Katherine K. Hanley
Reston
Northern Virginia District
2004-2006

Alan S. Witt
Newport News
Hampton Roads District
2005-

Mary Lee Carter
Fredericksburg
Fredericksburg District
2005-

Robert E. Sevila
Leesburg
Urban-at-large
2005-2006

James A. Davis
Winchester
Staunton District
2005-

Douglas Koelemay
McLean
Northern Virginia District
2006-

E. Dana Dickens III
Suffolk
Urban-at-Large
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Peter B. Schwartz
Delaplane
Rural-at-Large
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Cord A. Sterling
Stafford
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Much manual labor was the requirement for building and maintaining early roads.

Page 12
The James River and the Kanawha Canal played an important role in increasing communications and commerce between commercial centers and rural areas of the state.

Page 16
Inadequate funds for road maintenance meant it was crude and often neglected.

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Early equipment (horses) had to be fed.

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The early 1900s found automobiles regularly stuck in the mud.

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Engineering in the early 1970s.

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The Monitor Merrimac Memorial Bridge-Tunnel is the second man-made crossing of the Hampton Roads waterways.

Page 62
The George P. Coleman Bridge supports Route 17 between Yorktown and Gloucester Point.

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I-495 is Virginia's first major interstate to be completed fully.

Page 72
Virginia's tallest bridge – The Smart Road Bridge – carries the Smart Road across Wilson Creek in Montgomery County.

Page 74
Route 288 was completed in 2004 and created a long-awaited western loop for motorists traveling through Chesterfield, Powhatan and Goochland County.

Page 90
Pinners Point provides access from Portsmouth's Western Freeway into the Portsmouth Marine Terminal shown here.

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I-64 draws traffic into the Hampton Roads region, where seaports, military bases and recreational destinations are concentrated.

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Outsourcing became a key orientation in 2006.

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Today, an average of 88,000 vehicles a day use the Hampton Roads Bridge-Tunnel on I-64, with volumes exceeding 100,000 during the tourist season.

Page 98
The Pocahontas Parkway in Richmond is VDOT's first Public-Private Transportation Act project.

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I-81 is Virginia's longest interstate. Traffic volumes have nearly tripled from 1986 to the present.

Page 102
The Springfield Interchange south of Washington, D.C. carries 430,000 vehicles a day.

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Commonwealth Transportation Board members include the secretary of transportation, the transportation commissioner, the director of the Virginia Department of Rail and Public Transportation and 14 appointed members.

Amherst County road today

An 850-gallon basin water fountain was installed at the Amherst traffic circle at the intersection of Route 60 and Route 29 Business in June 2006. It is the oldest traffic circle in Virginia.

The exact location of the 1910 cover photo showing removal of wet subgrade in Amherst County is unknown, but it is believed to be Route 60.

100 YEARS OF TRANSPORTATION EXCELLENCE
1906 - 2006

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