

FOX BRIDGE NO. 1936

Spanning the North Anna River
on U.S. Route 1, approximately .45 miles
south of Chandler Crossing
Ashland vicinity
Hanover County
Virginia

HAER No. VA-94

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service

Northeast Region

Philadelphia Support Office

U.S. Custom House

200 Chestnut Street

Philadelphia, P.A. 19106

HISTORIC AMERICAN ENGINEERING RECORD

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Location: Spanning the North Anna River on U.S. Route 1, approximately .45 mile south of Chandler Crossing, Ashland vicinity, Hanover County Virginia

UTM: 18.4196200.283090

Quad: Ruther Glen, Virginia (photo-revised 1985), 1:24,000

Date of Construction: 1926

Engineer: C. S. Mullen, Chief Engineer
William R. Glidden, Bridge Engineer

Present Owner: Virginia Department of Transportation
1401 East Broad Street
Richmond, VA 23219

Present Use: Vehicular bridge

Significance: The celebrated opening of this bridge in 1926 signified a new era of road and bridge building and improvements in the state of Virginia, represented here by the dedication of a major stretch of U.S. Route 1, one of America's first north-south interstate highway systems.

The modest artistry of this rural crossing represents the lingering influence of the City Beautiful movement, a crusade that stressed the importance of aesthetics in public works construction. It also reflects a growing historical consciousness and an effort to commemorate America's past through elements of the national highway system. Part of the Jefferson Davis Memorial Highway, it specifically commemorated General Ulysses S. Grant's Wilderness Campaign of 1864.

From an engineering perspective, this bridge helps illuminate the development of metal truss technology, particularly during a period of great transition and standardization in bridge design and manufacture.

Project Information: This documentation was undertaken in March and April 1994 in accordance with the Memorandum of Agreement between

the Virginia Department of Transportation, Federal Highway Administration, Advisory Council on Historic Preservation, and the Virginia Department of Historic Resources as partial mitigation of the impact from the proposed replacement of the U.S. Route 1 bridges crossing the North Anna River. Historical research was conducted by Veronica L. Deitrick of the William and Mary Center for Archaeological Research (WMCAR). The physical analysis and description were undertaken by Mark R. Wenger and Willie Graham, consultants to the WMCAR.

Donald W. Linebaugh
Co-Director
Center for Archaeological Research
College of William and Mary
P.O. Box 8795
Williamsburg, VA 23187-8795

For much of the seventeenth century, few English settlers ventured into the frontier area in what is now northern Hanover and southern Caroline counties. By 1678, the Colonial Council authorized the establishment of Fort Mattapony to protect settlers from the threat of hostile Indians in the region. The fort was built on the north side of the Mattaponi River, east of the project area, close to the present location of Walkerton in King and Queen County (McCartney and Lucchetti 1981).

Hanover County was formed in 1720 from the western portion of New Kent County. Caroline County was created seven years later from Essex, King and Queen, and King William counties. There were already a few trading centers in the region, including one at Hanover town, southeast of the project area. A settlement was established along the Pamunkey River around Page's Warehouse in 1676 (Lancaster 1957:3). To the north, settlers had established a small community at Chesterfield Church by the end of the first quarter of the eighteenth century (Campbell 1954). Now known as Ruther Glen, Chesterfield was located just three miles northeast of the project area.

During the eighteenth century, the area around Chesterfield was "noted for its skilled workers including many joiners, carpenters, coopers, bricklayers, shoemakers, tanners, blacksmiths, weavers, tailors, millwrights and a chair maker" (Campbell 1954:406). Chesterfield remained a bustling community into the nineteenth century. Taverns, shops, mills, and other nearby commercial establishments served this section of the county. Agriculture remained the economic base for the region, though by 1800, many of the tobacco farms had diversified into grain production.

Roads were established early across Hanover and Caroline counties. They connected communities such as Chesterfield and Hanover town and allowed farmers to transport their crops to market. A north-south stage road—the predecessor of modern Route 301—crossed the center of both counties, traveling through Bowling Green and Hanover, and continuing to Richmond. The "rolling roads" of the colonial era led to warehouses and ports along major waterways. On these roads, tobacco planters transported the huge barrels called hogsheads, filled with the colony's cash crop.

These roads were the main avenues of transportation when military forces, under the command of General Lafayette, moved through the project vicinity during the revolutionary war in 1781. Although no significant battles occurred, General Cornwallis and his British contingent were also in the region during the same time span. At different periods of the campaign, both camped in the Doswell area. Cornwallis would eventually cross the North Anna River at Cocks's Ford, near the present location of the North Anna bridges (Lancaster 1957:34-35).

No road existed where present U.S. Route 1 runs through the project area, but a highway did pass just west of the project area. Known during the nineteenth century as Telegraph Road, it connected Chesterfield (Ruther Glen) and Carmel Church with Ashland in central Hanover County. When U.S. Route 1 was constructed, it did not mirror the path of Telegraph Road in

the project vicinity, although much of the rest of the route between Richmond and Washington, D.C., follows the same basic road bed. Telegraph Road crossed the North Anna River approximately 1,300 feet west of the project area; the bridge there was called the Chesterfield Bridge, or Taylor's Bridge (Page 1926:130; Jaynes et al. 1986:140). It was known locally as Fox Bridge, the same title that would later be applied to the two twentieth-century metal bridges (*Caroline Progress* 1926:7(25):1). The stone abutments that supported the Chesterfield Bridge are extant on either side of the North Anna River and are designated Virginia Department of Historic Resources (VDHR) Site 44CE252.

Less than .5 mile south of Chesterfield Bridge stood the home of Reverend Thomas H. Fox. Fox built his brick residence, called "Ellington," about 1830. He also constructed a two-story brick schoolhouse on his property, where he ran a school for boys. During the Civil War, Robert E. Lee stopped at this house to observe Union troop movements one mile to the north (Trudeau 1989:225). Rev. Fox kept a daily journal from 1854 to 1862 in which he recorded his daily routine and events of the Civil War occurring in the area. Still owned by the Fox family, excerpts of this document have been printed in the Hanover County Historical Bulletin (1984). The Fox house and school are designated VDHR Structure 42-400 and stand .4 mile south of the project area.

An important change to the area came with the building of the Richmond, Fredericksburg and Potomac Railroad (RF&P) in the 1830s. The RF&P ran through the centers of Hanover and Caroline counties, passing just east of the project area. Begun at Richmond, the construction of the rail line moved north, crossing the South Anna River in Hanover County by 1834 (Lancaster 1957:19). The railroad built a station at Chesterfield in 1836; thereafter, the community was known as Chesterfield Station. It was one of the first established rail stops in Caroline County, the other three being at Taylorsville, Milford, and Guineys (Griffen 1980). The RF&P reached Fredericksburg in January 1837 (Griffen 1984). A station was also built across the North Anna River at Bothwell, Hanover County. The Virginia Central Railroad soon intersected the RF&P at this location, and the local name was changed to Hanover Junction. In the 1920s, the name changed to Doswell in honor of the famous nineteenth-century horse-breeder, Thomas W. Doswell, whose "Bullfield" estate and its adjacent race track are featured as prominent landmarks on some Civil War maps of the area (Davis 1896:7; Virginia State Highway Commission [VSHC] 1924a; Lancaster 1957:62-63).

Many accounts of the Chesterfield Station note that it was very busy prior to the Civil War. "During the Richmond Fredericksburg and Potomac Railroad's early days, it had two daily passenger trains in each direction that made a stop atop Ruther Glen [Chesterfield Station] hill" (Griffen 1980:16). A telegraph line was also moved to this stop, and its office opened prior to the Civil War. Chesterfield was a bustling center along one of the most heavily traveled railroads in Virginia. This undoubtedly created heavier traffic along Telegraph Road and the bridge that spanned the North Anna River at that time. Hanover Junction grew due to the economic opportunities and mobility afforded by the railroads. The railroad stations and the

networks that developed to support them increased the importance of the area during the Civil War.

The railroad station and telegraph office at Chesterfield Station (Ruther Glen) served as a base of operation for Confederate troops in the area during the Civil War. Confederate Engineer Jeremy Francis Gilmer's 1863 map of Caroline County shows the project area during this period. The RF&P rail line and bridge are depicted to the east, while Telegraph Road is shown to the west with an adjacent fork leading to a crossing labeled "Andersons Ford." Interviews and journal accounts from this period tell of massive troop movements through the area. Some of the estimates suggest that 8,000 troops passed through each day (Hanover County Historical Society [HCHS] 1984:4-5; Griffen 1980). Often either Chesterfield or Hanover Junction was used as an overnight campground for these soldiers, who were usually required to check in at one of the permanent outposts established in both areas (Griffen 1980).

In May of 1864, Confederate and Union forces engaged along the North Anna River in the vicinity of the project area. Union forces under Ulysses S. Grant were met by Robert E. Lee's Confederate Army of Northern Virginia on both sides of the river from Jericho Mills, four miles west of the project area, to the RF&P railroad crossing just east of the current U.S. Route 1 bridges (Frassanito 1983:127). The Union Fifth Corps crossed at Jericho Mills on May 23, encountering Confederate resistance south of the river. This area now comprises a portion of the North Anna Battlefield District (VDHR No. 43-123), and is located one mile west of the project area.

The Union Second Corps proceeded down Telegraph Road where they encountered a Confederate redoubt (VDHR Site 44CE251) just north of the Chesterfield Bridge, manned by South Carolinian troops under Colonel John Henagan (Trudeau 1989:227). General Joseph B. Kershaw's Confederates also held the Chesterfield Bridge, the RF&P railroad bridge .5 mile east, and the southern bank of the river (Frassanito 1983:132). Federal forces under General David B. Birney captured both the redoubt and Chesterfield Bridge on the evening of May 23, 1864. The Confederates retreated the following morning to a position one mile south of the river, after burning the southern half of the railroad bridge. The Union Army then built two pontoon bridges and a footbridge in the vicinity of the railroad bridge on May 24 to hasten the Second Corps' crossing of the North Anna (Frassanito 1983:138). All three structures were temporary. Union troops destroyed the remainder of the railroad bridge on May 25. A portion of the North Anna Battlefield District (VDHR No. 43-123) includes the Confederate redoubt and lands southeast of the project area.

Located on the Telegraph Road, then the major thoroughfare between Richmond and Fredericksburg, "Ellington" was the perfect vantage point for Thomas Fox to observe military activity in the area. He recorded the permanent stationing of eight Confederate soldiers at the RF&P bridge on April 25, 1862 (HCHS 1984:4). He would later recount the destruction of the same bridge:

This is an eventful and melancholy day, and a day long to be remembered. The R.R. and county bridges were burned this morning. The R.R. was a sublime scene. It was very dry, of heart pine, and burned down in an hour; it fell at once, and the black smoke rolling in great volumes toward the skies, the red and angry flames curling far above the trees; and the falling and crackling timber impressed the mind with gloomy thoughts. Our own dwelling may meet a similar fate, the enemy in overwhelming forces are pressing upon us in two or three directions . . . The [Hanover] Junction abandoned to the use of all who choose to take, was not burned for want of orders (HCHS 1984:5).

No significant fighting took place after Union troops crossed the North Anna River. Because Lee had positioned his army south of the river to gain the best tactical advantage, Grant withdrew back across the North Anna on May 27 to begin an easterly approach toward Richmond by way of Cold Harbor (Frassanito 1983:146). As the Union Army retreated, they dismantled their pontoon bridges and destroyed the Chesterfield Bridge.

After the Civil War, citizens rebuilt the Chesterfield Bridge, and the RF&P replaced the railroad span across the North Anna River, both destroyed in the fighting of May 1864. Superintendent of the Railroad T. D. E. Meyers changed the name of Chesterfield Station to Ruther Glen to avoid confusion with Chesterfield Court House near Richmond (Fall 1989). Commerce gradually resumed, and a region devastated by battles and foraging armies began to revive. Agriculture and the lumber industry were two important factors in the recovery of the county's economy. By the late nineteenth century, crops such as tobacco, corn, wheat, oats, and strawberries were significant exports for Hanover and Caroline counties. Sawmills were important sources of income for many Caroline County residents.

During the 1880s and 1890s, the RF&P continued to expand. Changes and mergers with other railroad systems allowed the RF&P to thrive and become one of the most significant lines along the East Coast. The company expanded both freight and passenger service, purchased several more engines, and maintained or replaced several bridges along the line. Traffic along the railroad increased well into the early twentieth century, creating an important north-south link for the transportation of people and goods. The railroad created economic opportunity in the towns at which it stopped; however, many of the rural stations lost some of their importance as engines were improved and trains were able to transport passengers between urban areas without frequent stops along the way.

By the end of the nineteenth century, several changes had begun that would eventually lead to a transformation of transportation systems and ultimately effect almost every level of American culture. During this time, the groundwork was laid for public and legislative support for road improvement in future decades (Newlon 1983:3). One of the important factors was the invention of the bicycle. A predecessor to the modern automobile, it affected social opinion and

inspired a number of important inventions, such as the pneumatic tire. "The bicycle created an awareness of the flexibility and convenience of travel by road," which had been neglected in the era of rail transport (Rae 1971:26). Clubs formed by cycling enthusiasts to share experiences and lobby for better road maintenance were the seeds from which better roads associations of the twentieth century evolved (Rae 1971:29).

By the 1890s, efforts to convince the public that road improvement should be given a high priority were gaining momentum. The railroads participated in this effort when they realized that improved roads would expand areas from which they could draw business, as well as reduce the need for some of the unprofitable secondary routes that they maintained (Rae 1971:31). The Farmers Alliance and the Populist Movement also got involved in the fray, but for reasons diametrically opposed to those of the railroad administrators. The railroads were a prime target for the agrarian reform movements of the late nineteenth century. Farmers felt that good roads would provide an alternate means of transportation and allow them more leverage against the powerful rail interests. Comparisons with the paved avenues of some urban areas in America and the more hospitable highway networks of Europe also served to strengthen the case put forth by movement leaders (Labatut and Lane 1950).

The National League for Good Roads was founded in 1892 and held its first convention in Washington, D.C., one year later (Rae 1971:31). These early efforts resulted in the 1893 creation of the Office of Road Inquiry within the Department of Agriculture (Rae 1971:31). This agency would eventually evolve into the Bureau of Public Roads. Thus, the automobile, which made its debut in America during the 1890s, made its appearance simultaneously with the first proposal for a federally funded highway program—that which reached Congress in 1902 (Rae 1971:34-35). However, the rapid adoption of the motor car soon created a more forceful movement that would build on the foundations provided by these early attempts to spur road improvement.

Due to the increasing popularity of the automobile as a means of transportation, Virginia, like the rest of the country, sought to upgrade its road and bridge system during the early twentieth century. According to the minutes of the Caroline County Board of Supervisors, from the 1890s to the 1920s, road maintenance and repair was a common concern and seems to have been given priority treatment. By 1915, the board called for bids to construct reinforced concrete and steel bridges county wide (Caroline County Records Board of Supervisors Minutes 1915:332). In 1914, the National Highways Association proposed that 2,200 miles of national highways be developed in the state. The Virginia edition of the "Good Roads Everywhere" map showed tentative locations for the construction of these major routes (National Highways Association 1914). These events marked the beginning of a trend that would eventually have a number of significant ramifications for Virginia and transform areas through which highways, such as U.S. Route 1, would pass.

Transportation systems were undergoing a radical transformation, and U.S. Route 1 became a symbol of the trend toward independent mobility and progress in Hanover and

Caroline counties. U.S. Route 1 not only provided a reliable system for transporting people and goods, but also increased mobility previously restricted by poor roads and monopolies held by railroads. In these contexts, U.S. Route 1 and its bridges have played an important role in the history of transportation in the area. Historically known as Virginia Route 31, the Jefferson Davis Highway, the Richmond-Washington or Washington-Richmond Road, or the Capital Highway, U.S. Route 1 was a major link between the U.S. capital and the southern United States, as well as the primary route between Washington and Richmond. This road became a conduit for moving increasing numbers of tourists through the state and provided a crucial path for business and commercial development.

The policy of Federal aid to states for highway construction began during the administration of President Woodrow Wilson with the passage of the Federal Aid Road Act in 1916 (Steele 1951:15). This event marked the first attempt by government to provide aid systematically on a large scale rather than on a small case by case basis. Some of the impetus for the policy of Federal funding included the potential benefits to the U.S. Mail Service and increased mobility for the War and Navy Departments (Moore 1930:4). Additionally, the 1916 legislation allowed more latitude for general purpose roads than previous proposals, opening the opportunity for more widespread development (Newlon 1983:3). Unfortunately, many of the first roads constructed under this act were not designed to meet the needs of the rapidly increasing automobile traffic. This was almost immediately obvious to motorists, and the government soon learned the cause of the motorists' dismay. When the War Department attempted to use these new thoroughfares for transportation of troops and supplies during World War I, the road surface in many areas literally crumbled beneath them. The problems created by deteriorating road surfaces and unstable bridges became even more serious when the federal government's primary means of transporting military supplies by railroad was virtually frozen by congestion up and down the Atlantic coast (Newlon 1983:4). The public was outraged that the facilitation of military shipments, one of the most important selling points for the use of federal funds in the new highway system, was not achieved. These factors would soon lead to the beginnings of intensive scientific testing of road and bridge technologies. A coordinated national research program was developed and initiated with the formation of the National Advisory Board on Highway Research in November 1920 (Newlon 1983:4).

Much of the construction of U.S. Route 1 through Hanover and Caroline counties would have been impossible without aid provided by federal programs (Trinkle 1925:X). During its planning and fund raising periods, certain sections of U.S. Route 1 were designated important links in the National Defense Highway System (Southern Atlantic Coastal Highway Commission [SACHC] 1924:3). The government considered this system very important and wanted to avoid the problems encountered in transporting supplies and personnel during World War I. Accordingly, U.S. Route 1 and other links in the system received high priority for federal aid (Preston 1991).

By the late 1910s, state agencies, such as the Virginia State Highway Commission, were becoming well established. These organizations, along with the federal government, began to

carve out a transportation strategy. Their plan was to create a nationwide system of well-linked hard surface roads and sturdy bridges. Plans began with connecting urban areas and then expanded to create networks of highways that crossed state borders and formed interstate thoroughfares. Once construction was underway, the states sought to develop roads in areas with varying population densities in an attempt to evenly distribute new routes across the state as quickly as possible. The Virginia primary state highway system, including U.S. Route 1, was laid out in 1918. The plan at that time was to eventually complete 4,002 miles of roads (Virginia State Highway Association [VSHA] 1934:4). This original figure was soon surpassed as the rise in automobile traffic and the call for well-maintained roads surged (VSHA 1935:14).

A plea for continuation of federal aid policies by Virginian member of the U.S. House of Representatives Walton Moore elaborated on what a system of good roads meant for his state: ". . . very many of which [roads] are of primary importance to the people and particularly the farmers, in reaching the shipping points and markets where their outgoing products and incoming freight are handled" (Moore 1930:4). By 1921, trucks were seen as crucial to the national economy, and the crumbling road system threatened to create economic chaos (Newlon 1983:3).

In Virginia throughout the 1920s, there was a barrage of campaigns that were specifically aimed at encouraging the development of a system of hard-surfaced roads. Complaints were made that Virginia's muddy, rut-filled byways were impeding businesses, handicapping residents, and discouraging tourism. The calls to "Get Virginia Out of the Mud" were rampant (American Automobile Association 1921:1). Many individuals were primarily concerned with the corridor that would develop into U.S. Route 1. John B. Cochran, president of the Franklin National Bank in Washington, D.C., was one of many who wrote in complaint to the Governor; "I am in the position to hear the constant complaint of the North and South bound tourists to and from Florida as to the condition of the Richmond-Washington Road" (Trinkle 1924:X). Governors E. Lee Trinkle (1922-1926) and Harry F. Byrd (1926-1930) were both integral players in the development of the highway system in Virginia. During their administrations massive road and bridge construction campaigns were undertaken to "bring Virginia into the twentieth century" (Steele 1951:15, 30).

By the 1920s, a number of associations such as the South Atlantic Coastal Highway Association, the Appalachian Scenic Highway Association, and the Lakes to Florida Highway Association were lobbying states and the federal government to complete construction and improvements along stretches that could be used to create continuous corridors for interstate travel. These groups often argued that until "these roads were created modern development could not begin" (SACHC 1924:3). Governors were given honorary titles in an effort to increase their interest in expediting these projects. In 1922, the South Atlantic Coastal Highway Association, which was interested in adding much of Virginia's U.S. Route 1 to their system, nominated Governor Trinkle as an honorary vice-president of their organization (Trinkle 1922:X). Later, Governor Byrd was accorded the same distinction when he took office (Byrd 1926:XIV). U.S. Route 17 soon supplanted U.S. Route 1 as the state's segment of the Atlantic Coastal Highway. However, by then, the U.S. Route 1 corridor was being touted as part of the

Capital Highway System. This proposed system would have linked all of the southern capital cities directly with Washington, D.C. While it never fully developed, many of its segments, including the project corridor, were eventually joined to form the Jefferson Davis Memorial Highway.

Construction of U.S. Route 1 took place during the mid-1920s. The new highway ran east of the old Telegraph Road, spanning the North Anna River between the earlier Chesterfield Bridge crossing and the RF&P railroad bridge. This two lane metal-truss bridge, constructed in 1926, sat on reinforced concrete supports. Seen as a showpiece of modern design, its picture was featured in the *Nineteenth and Twentieth Annual Report of the State Highway Commission to the Governor of Virginia* (Virginia State Highway Commission 1927:18). The highway was later widened and a second metal truss bridge was built to carry two more lanes of traffic. The completion of the first bridge significantly reduced travel distances, especially for heavy loads, which the older one lane Chesterfield Bridge could not carry. In 1927, when U.S. Route 1 between Washington and Richmond was officially opened as a major thoroughfare, the residents of relatively rural Hanover and Caroline counties had access to paved roads earlier than residents of other sparsely populated areas of Virginia.

Highway associations such as the Jefferson Davis Memorial Highway Association, the Gold Star Highway Association, and the Lee Highway Association were all operating within Virginia during the 1920s, each petitioning for the designation of interstate routes to commemorate the subject(s) of their attention (Trinkle:X; Byrd:XIV). Virginia State Route 31/U.S. Route 1 was identified as a part of the Jefferson Davis National Highway. Upon completion of construction, U.S. Route 1 was officially opened amidst great fanfare in Fredericksburg, Virginia. The pageantry on May 28, 1927, was inherently intertwined with the highway's role in honoring the president of the Confederacy and its cross-continental connection of the South. The celebration paid little attention to the highway's function as one of the first official routes to connect the East Coast from Maine to Florida (*Caroline Progress* 1927:8(35):5). Still, it became a part, not only of one of the first north-south routes down the Atlantic coast, but also of an east-west route extending across the southern states from coast to coast.

Approximately eight months before U.S. Route 1 was officially opened, the 1926 North Anna Bridge was also the subject of a ceremony designed to celebrate its opening. This event, which occurred on October 1, 1926 at "Ellington," concentrated on the bridge's commemorative role in honoring the Civil War engagements that had taken place in the area (*Richmond Times-Dispatch* 1926a). Respected Virginia historian Douglas S. Freeman delivered the keynote speech, which centered around the importance of the local area during the Civil War. Freeman concluded with a plea for continued preservation and commemoration of history in Virginia (*Richmond Times-Dispatch* 1926b). A copy of the speech is on file in the Library of Congress.

The bridge manifested the growing interest in American history. This movement became interrelated with the development of automobile routes. When first invented, the car was seen

by many as a way to escape the noise and pollution of the city. This return to the country was enhanced by the presence of historic sites along newly established roadways (Rhoads 1986:133). Soon the quest for history became the focus of the journey rather than an enhancement. Historic house museums and antique shops were quickly established. Architecture was also influenced by this phenomenon as business owners attempted to cash in on the attraction of history (Rhoads 1986). One of the most popular styles emulated for highway architecture was colonial. Service stations, hotels, and roadside restaurants all tried to recreate the romance of the colonial era. Several examples of colonial revival structures can still be seen in the project environs today. Increased exposure to the past soon led to fears that twentieth-century development would destroy many surviving historic structures and landscapes. Thus, many within the historic preservation movement had an ambivalent relationship with the automobile, in that the means of discovery of these historic properties became the single greatest threat to their continued existence (Rhoads 1986). As local and state historical societies began to form, they instituted policies to preserve existing cultural resources and to mark and memorialize areas and events of historic importance.

One of the first of these projects to get underway on a large scale was the Virginia Historical Marker System. Sponsored by the state government, members surveyed the highway routes to identify areas of historical significance. Appropriate markers were then designed and erected. U.S. Route 1 was surveyed well before construction was completed and by the time it opened, historic markers had been installed. These included two markers associated directly with the project area and its environs, detailing the Civil War activities that the bridge was designed to memorialize. Pamphlets that included inscriptions and a map of all the markers within Virginia were made available to the public by the State Commission on Conservation and Development (1929).

Auto tour maps were designed to help motorists reach their destinations as well as advertise businesses along the road. Relying on odometer readings and easily spotted landmarks, routes were often circuitous due to attempts to use the best roads and still include advertisers' businesses along the way. Complicated itineraries were not a concern since the trip itself was considered to be an integral part of automobile vacations. During the early 1900s, the most successful routes were often designed to pass buildings and areas of historic note. Until the completion of the North Anna bridges and the subsequent paving of the remainder of U.S. Route 1 between Ashland and Fredericksburg, the area was avoided by these guides. The 1915 Automobile Blue Book suggests two possible routes for auto travelers between Washington, D.C. and Richmond. The first choice was a 186.5-mile route that completely bypassed the project area by forming a wide arch and traveling as far west as historic Orange Courthouse. The second route was 65.1 miles shorter and passed very close to the project area. It was described as:

a short but miserable way connecting the two capitols, following what is known as the Old Telegraph Road. Some short stretches of macadam and improved road; Balance poor to bad dirt, dangerous in

many places. Numerous fords, None of them big or difficult. Should positively never be attempted in wet weather (American Automobile Association 1915:869).

By the 1920s, other routes that reduced the distance between the two cities had been located and improved. The traveler was now advised to use either Virginia State Highway 312 or 311, both of which were still longer than the Telegraph Road. After the completion of the U.S. Route 1 corridor, the previously preferred routes virtually disappeared from tourist maps, and U.S. Route 1 became the primary corridor for travel through this part of the state. It not only offered a shorter and more convenient route to ever increasing motor traffic, but also managed to retain the historic character that had made auto touring popular during its early years.

For many of those living in the areas through which the new road would pass, the benefits were much more practical than many of the factors mentioned above. The advantages to the area of Caroline County, which extends along U.S. Route 1 from the North Anna River crossing to 1.8 miles north, are indicated by a short article written by the Ruther Glen/Carmel Church correspondent for the *Caroline Progress* of Bowling Green, Virginia:

. . . several points of this new road will come closer to Ruther Glen than the old telegraph road, and many of the curves between this place and Doswell will be done away with. A handsome bridge will be built over the North Anna river north of Foxes bridge. The highway when finished will shorten the distance between Richmond and Fredericksburg by several miles. At the present time the telegraph road between Doswell and Golansville is almost impassable on account of mud. The school truck between Carmel and C. T. Smith school has made only one or two trips in the past ten days (1926:7(25):1).

With the arrival of the highway, the community became more accessible, travel distances decreased, and a more attractive landscape, created in part by the bridges, existed. Perhaps most importantly, roads that had routinely gone through periods of impassability no longer caused as much interruption of daily routines. In a 1926 letter to Governor Byrd, a constituent seems to summarize the general sentiment of rural Virginians, "we need good roads, good schools, and good churches" (Byrd 1926:XIV). This correspondent places the importance of highway construction alongside the development of educational and religious facilities. Construction of a new highway often heralded a new era in the lives of nearby residents.

Prior to the construction of U.S. Route 1 and the Fox Bridge in the twentieth century, no road or bridge passed through the immediate project area. Telegraph Road and Chesterfield Bridge served as the main thoroughfare for the region; both are located within .5 mile of the current North Anna bridges. Federal troops constructed two pontoon bridges and a footbridge in the vicinity of the RF&P Railroad bridge in 1864, and one or more of these structures may

have been in or near the project area. However, all three were temporary structures that were dismantled when the Federals retreated. Union and Confederate troops moved quickly through the area; actual fighting took place one mile south of the North Anna River.

After the Civil War, the area recovered slowly and the railroads, which had increased in importance during the war continued to grow and thrive. However, transportation systems throughout the country were on the eve of a radical change. While many factors contributed to this situation, one of the most important of these was the automobile. As the auto began to overtake the horse as the primary means of personal transportation, private citizens vocalized their discontent with the condition of the road system. Business leaders and farmers also began to see the tremendous opportunities that automobile transport could bring to their endeavors. The first quarter of the twentieth century was a dynamic period in the history of transportation. During this time, laws were enacted, committees and departments were formed, and the beginnings of road and bridge systems were designed. In short, systems were put into place that would allow for the unprecedented period of construction and growth during the following 25 years. At the same time, a strong historic preservation movement and a resurgence in historical consciousness emerged throughout American society. This situation had a profound effect on the evolution of highway systems and the networks surrounding them. The 1926 North Anna Bridge was planned and designed during this era. The highway of which it is a part was designed to provide the most direct route possible between Richmond and Washington, D.C. Moreover, it also filled a symbolic role by providing an atmosphere in which motorists felt that they were part of local history.

The southbound crossing of U.S. Route 1 over the North Anna River is accomplished by a two-lane, single-mode steel truss bridge with concrete approach spans. Designated Fox Bridge No. 1936 by the Virginia Department of Transportation, the bridge was built in 1926 to accommodate traffic in both directions. By 1935, traffic had increased enough to require an additional two lanes along this route below Fredericksburg, and a second structure—Fox Bridge No. 1937—was built 13.5 feet to the east (American Automobile Association 1937). The southbound lanes were relegated to the old bridge; the new bridge served northbound traffic.

Spanning between the banks of the North Anna is a four-panel Warren through truss with verticals, made up of rolled and composite sections. The span is 140 feet long, 25 feet 10 inches high, and 27 feet wide, outside to outside. The concrete roadway, now covered with asphalt, is 24 feet wide. All connections are riveted except the lower portal struts, which are associated with alterations that occurred in 1945.

The top chords are joined at the panel points and intermediate points by composite lateral struts. Each of these lateral struts is made up of four angles joined by lacing to form a square cross-section. Alternate lateral struts are intersected at their midpoint by two diagonal struts. Each diagonal strut is made of two angles joined with lacing to form a channel section. These attach to the lateral struts by means of two horizontal gusset plates.

The top chord and inclined endposts are 15.5 × 15.5-inch composite members made up of paired channels, each 15 × 3.5 inches, joined with a steel plate above and lacing below. The hip and intermediate verticals are composite I-sections made up of four angles, each 3.25 × 3.25 inches, riveted to a 7.75-inch-wide flat plate. Diagonals in the tension position are 10.5 × 7.5-inch composite I-sections made up of four angles connected by stay plates spaced at 3-foot 3-inch intervals. Diagonals in the compression position are 14.5 × 10.25 inches overall, being paired channels joined by top and bottom lacing. The bottom chord is made up of paired composite channels (each being two angles and a plate) connected with lacing on the top and bottom sides.

The end floor beams are 30.5 × 6-inch rolled I-sections. Intermediate floor beams are also rolled I-sections, stiffened by a series of vertical angles riveted to the webbing.

Due perhaps to the growing height of truck trailers and oversized loads, the lower portal strut appears was raised in 1945, making it necessary to cut back the stabilizing diagonal braces. Longer gusset plates were required to reattach these truncated braces to the new strut.

Further alteration is visible on the underside of the roadway. Unlike the approach span decking, the concrete deck of the main span was formed with plywood and thus appears to have been entirely replaced.

At either end, the truss is borne on a concrete pier composed of paired, conical columns connected by solid webbing, the whole capped with a thick beam on which the trusses bear. The webbing arches between the two columns, leaving an aperture near ground level. At the bearing points, the truss rides on a special shoe let into the concrete support. This fitting allows the bearing points to move as the truss expands and contracts in extreme temperatures.

On the southeast endpost of the truss is a plaque with the following text:

VIRGINIA STATE HIGHWAY
DEPARTMENT
CAPACITY 15 TONS
BUILT BY
ROANOKE IRON & BRIDGE WORKS
ROANOKE VA
1926

Each of the approach spans is borne on five stilted concrete girders, poured integral with the roadway. Adjacent to the truss, these girders bear on the concrete piers already mentioned. At the far ends, they ride on a massive concrete beam carried by two square columns. Just behind these supports is a concrete abutment.

Both approach spans are 40 feet long and 25 feet 10 inches wide, outside to outside. The balusters of the concrete balustrades are rectangular in section, with concrete railings tenoned

into posts. At a point corresponding with the large concrete supports below, each of the railings is interrupted by a concrete pedestal bearing a 5-foot 9-inch obelisk. These obelisks break the rhythm of each balustrade and give the bridge a ceremonial air.

On the base of the southwest obelisk is a bronze plaque fashioned in the form of a shield, bearing the following text:

NORTH ANNA
RIVER BRIDGE
1926
VIRGINIA STATE HIGHWAY COMMISSION
H. G. SHIRLEY CHAIRMAN
WADE H. MAGGIE I. WALKE TRUXUN
A. J. HUFF H. B. SPROUL
C. S. MULLEN, CHIEF ENGINEER

WM. R. GLIDDEN, BRIDGE ENGINEER

Let into the base of the southeast obelisk is another shield-shaped plaque, bearing the state seal of Virginia and the following text:

NORTH ANNA RIVER
GENERAL ROBERT E. LEE COMMANDING
THE ARMY OF NORTHERN VIRGINIA
CROSSED HERE 22 MAY 1864
AND CHECKED
THE ARMY OF THE POTOMAC
COMMANDED BY GENERAL U. S. GRANT
"A CRISIS IN THE WAR BETWEEN THE STATES"

Below this is a separate bronze shield with a stylized Confederate battle flag. These memorials refer to the Wilderness Campaign of 1864, in which Henegan's brigade of South Carolinians, on the orders of General Robert E. Lee, entrenched north of the river to deny Ulysses S. Grant's Union forces the use of Chesterfield Bridge, about .25 mile from the present crossing.

The concrete elements of both approach spans appear to have been painted white at some point, further indication of the structures ornamental/commemorative character.

The steel truss span reflects a statewide trend towards standardization in the design and construction of highway bridges. Several important factors contributed to this phenomenon. On the national scene, the Highway Act of 1921 mandated upgrading and standardization of transportation systems throughout the United States. These directives acquired tremendous

impetus during the Hoover and Roosevelt administrations as federal agencies funded thousands of public works projects. A general move toward consolidation in the bridge-building industry amplified the homogenizing effect of these federal initiatives as larger companies bought up and absorbed their smaller competitors. Thus, the growing number of bridge contracts was handled by a shrinking cadre of bridge contractors. Improvements in the quality of steel and the standardization of shapes (due in part to a consolidation of the steel industry) also accelerated the trend toward standardization.

Concerning extant 1910-1932 truss bridges in the Richmond District, Deibler, a research analyst for the Transportation Research Council, notes that these structures:

reflect the standardization that had occurred in twentieth century technology. Mass production of structural steel in standardized shapes and sizes by a limited number of manufacturers assured a less than individual quality to truss designs, regardless of what particular company designed or fabricated a bridge. Trusses became more simple, using fewer but more massive members with riveted gusset-plate connections. Instead of there being a rich variety in truss configurations such as were patented and marketed during the nineteenth century, e.g., the Bollman, Fink, Howe, Parker, Pratt, Town, Post, Petit, and lenticular, two basic truss types—the Pratt and Warren/triangular—came to dominate the field. This is quite clearly demonstrated in the Richmond District, where all of the truss spans are either Pratt or triangular configurations (Deibler 1976:V:3-7).

Throughout the state, for all post-1932 trusses whose manufacturers could be identified, only three companies were represented—the Roanoke Bridge and Iron Works, the Roanoke Bridge Works (possibly the same two companies), and the Virginia Bridge and Iron Company. These establishments were all located in Roanoke, Virginia, and attest to the inbred nature of truss design by this period.

In 1926, the Virginia Highway Commission published its first bridge-building specifications, probably in response to the 1921 federal legislation. Bound into these specs were standard forms for bidding bridge contracts and standard contractual agreements for construction (Virginia State Highway Commission 1926). In 1932, the recently formed Virginia Department of Highways assumed responsibility for administering the design, construction, and maintenance of all highway bridges in the state (Pawlett and Boyd 1991:8). These developments, occurring as they did over a short period of time, gave tremendous momentum to the drive toward standardized bridge technology.

This trend is apparent in the new prevalence of the Warren truss with verticals in Virginia bridge design. The flexibility of this structural configuration is evident in the variety of bridge types for which it was used—a double cantilevered span in Wise County (VDHR Structure 95-

48), a centrally supported span at Castleman's Ferry in Clarke County, a center-pivot span over the Chickahominy River on Route 5 in Charles City County, the hand-operated swing-truss Walkerton Bridge over the Mattaponi River in King and Queen County, the vertical-lift Benjamin Harrison Bridge over the James River in Prince George County, and simple-span pony trusses over the Nottoway River on U.S. Route 301 and Virginia Route 40.

Comparison of the present span with the Route 40 bridge, to cite just one example, illuminates the growing conformity of certain design details as well. In both cases, the piers of the concrete supports are joined by arched webbing. At both sites, the approach spans ride on stilted concrete girders, and each of these spans has pre-cast concrete railings tenoned into poured-in-place stanchions. Each of the steel trusses has special fittings on the endposts to carry the end floor beams. Below these beams, identical expansion bearings allow the spans to move with changes in temperature. Each truss is fitted with pipe railings that run on L-shaped standards riveted to the stringers. The conformity of details between the two sites is all the more remarkable when we remember that this comparison matches pony and through trusses built almost a decade apart.

Engineers realized the practicality of the Warren truss early in the twentieth century and promoted the type as an efficient alternative to the widely used Pratt design. The Warren system used less material than the Pratt and, by avoiding adjustable members, also preserved the symmetry of the structure—a difficult matter in Pratt designs when stiffened ties were required in place of counter ties. In the design of joints, riveted connections came to be preferred, since pins tend to wear out as members are subjected to a reversal of stress under live load (Johnson et al. 1910:3-4). In Virginia, engineers began to favor Warren trusses with rigid joints.

Though several large concrete bridges were erected in Virginia during the 1910s and 1920s (the Seventh Street Bridge in Lynchburg and the U.S. Route 1 crossing of the Appomattox River in Petersburg being two elaborate examples), their use for short spans as an efficient alternative to plate girder bridges does not seem to occur much before the 1930s. The 1932 Bridge Specifications for the Commonwealth of Virginia promoted concrete girder spans for lengths ranging from 18 to 60 feet (Table 1). Both approach spans of Fox Bridge No. 1936 measure 40 feet 3 inches, falling well in line with these figures.

In this case, however, concrete was chosen less for its structural qualities than for its ornamental possibilities, for the bridge was to be a part of the Jefferson Davis Memorial Highway and was to commemorate a specific campaign of the war in which Davis figured so prominently. Together with historical maps and signs, such memorials linked the nation's historical consciousness to the emerging network of national highways and thus to the American landscape with decorative railings, obelisks, and plinths on which to mount bronze plaques.

The commemorative and ornamental aspects of this bridge were a legacy of the City Beautiful Movement, a crusade for civic art and aesthetics in the improvement of American cities. According to urban reformers, virtually all elements of the city—streets, parks, buildings,

and bridges—should be elevated to the level of civic art. Increasingly, architects and planners lavished artistic attention on the entire urban landscape, taking special note of bridges and other conspicuous amenities. The goals of this movement to beautify American cities were first articulated by Charles Mulford Robinson in a series of essays for the *Atlantic Monthly*. A tireless reformer and prolific writer, Robinson went on to promote his ideas in more than a hundred other articles and two highly influential books, *The Improvement of Towns and Cities; or, the Practical Basis of Civic Aesthetics* (1901) and *Modern Civic Art; or, The City Made Beautiful* (1903). The ideas of Robinson and other reformers rapidly commanded wide assent, but by the outbreak of World War I, the crusade began to lose its force as planners abandoned aesthetics-based reform in favor of more pragmatic issues (Wilson 1979:87-92). But civic art was never effaced entirely from the thinking of planners and architects. Rather, these ideas persisted and later gained new momentum through the funding of public works projects during the Hoover and Roosevelt administrations. The modest artistry of the 1926 bridge thus represents an afterglow of a culturally important crusade.

Table I

Types of Bridges for Crossings of Various Widths

From *Bridge Specifications* (Commonwealth of Virginia Department of Highways 1932:144).

Steel Structures

| | |
|--|----------------|
| Rolled beams for spans up to | 60 feet |
| Plate girders for spans | 30 to 125 feet |
| Riveted half-through trusses for spans | 45 to 110 feet |
| Riveted trusses for spans above | 90 feet |
| Pin-connected trusses for spans above | 150 feet |

Concrete Structures

| | |
|---------------------|------------------|
| Slab spans | Up to 20 feet |
| Simple girder spans | 18 to 60 feet |
| Arches | All span lengths |

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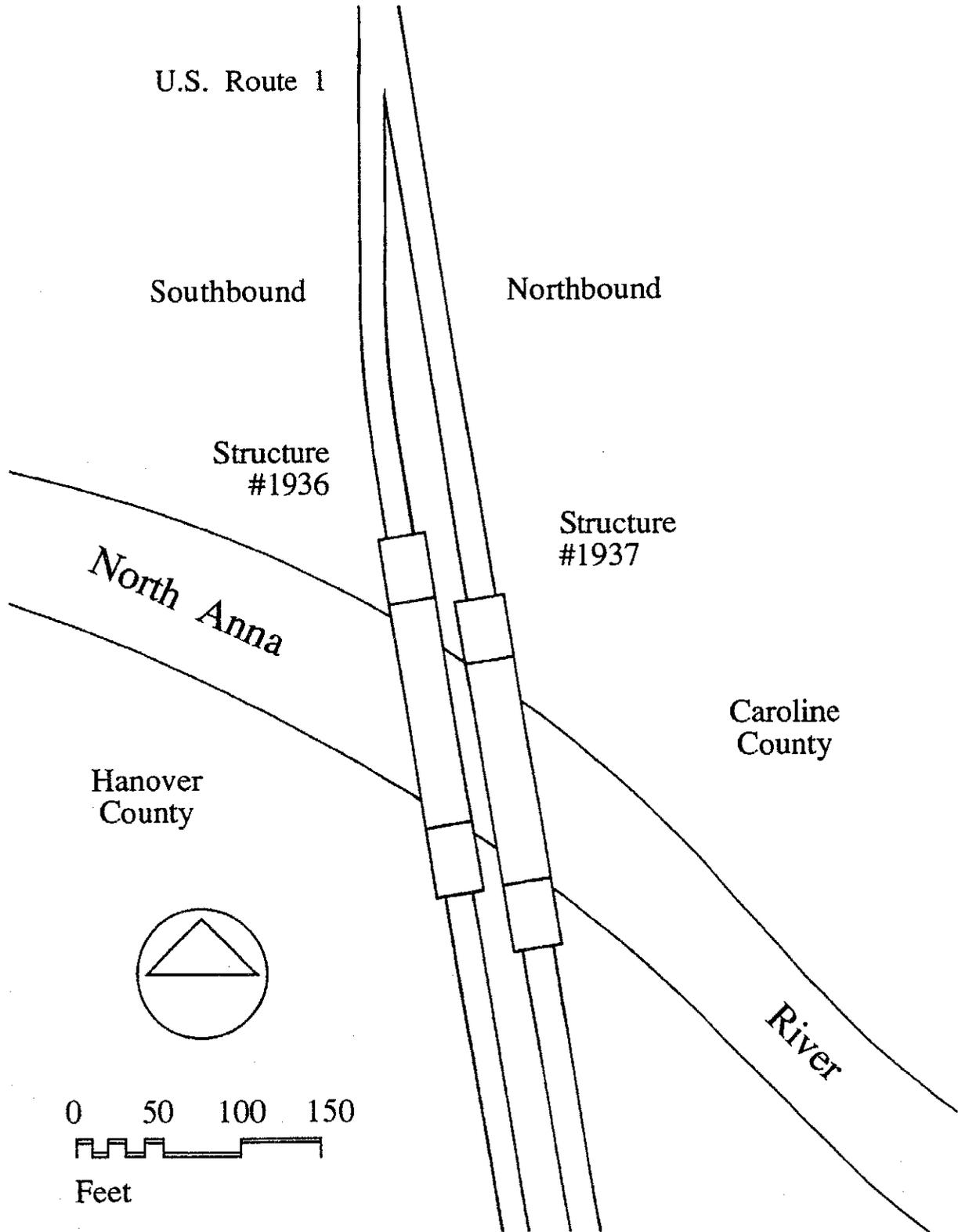
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Site Plan



Appendix I

Schedule of Design and Repair Drawings
Virginia Department of Transportation
Richmond District

Fox Bridge No. 1936 Southbound Lanes

| <u>Plan No.</u> | <u>Year</u> | <u>Work</u> |
|-----------------|-------------|-----------------------------------|
| 29-1 | 1926 | New Bridge |
| 56-4A | 1946 | Portal Repair |
| 56-4B | 1956 | Armored Joint Repair |
| 29-1A | 1966 | Strengthen Floor Beams & New Slab |
| 29-1B | 1973 | Portal Repair |
| 29-1C | 1982 | Portal Repair |
| 29-1D | 1982 | Portal Repair |
| 29-1E | 1984 | Portal Repair |
| 29-1F | 1985 | Portal Repair |
| 29-1G | 1989 | Portal Repair |
| 29-1H | 1991 | Portal Repair |