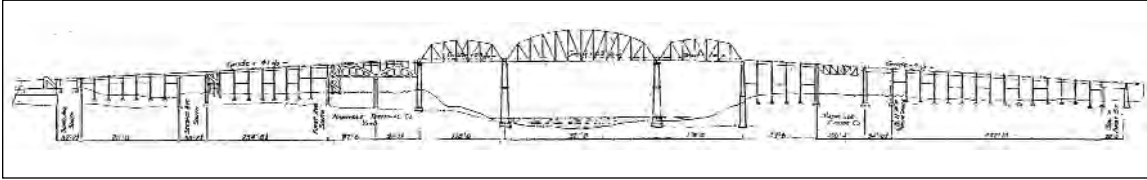


**(#58) 19-03245-01.47: Shelby Street Bridge spanning the Cumberland River in downtown Nashville, Davidson County (Nashville West Quad, 308 NE).**



Significant under Criterion A for its associations with Nashville's transportation history and under Criterion C for its engineering design.

At the turn of the century, Nashville, which is Tennessee's State Capital, was one of the fastest growing cities in the South. However, with only the 1886 Woodland Street Bridge to East Nashville, the city experienced difficulty in expanding to the east and north. In 1905, Davidson County began exploring the possibility of building a new river bridge that would connect to East Nashville. Dissension quickly developed over the site of a new bridge. Downtown merchants wanted the new bridge at the foot of Broadway while East Nashville residents wanted a site north of the Woodland Street Bridge. In the end, the county built both bridges: the Shelby Street Bridge (then called the Sparkman Street Bridge) near Broadway and the Jefferson Street Bridge (19-03258-00.40) to the north of Woodland Street.

Nashville engineer, Howard M. Jones, whose experience was largely limited to designing bridges for the Nashville, Chattanooga, and St. Louis Railroad, designed both bridges. In 1907, the county began the bid letting process for various elements of the bridge project and simultaneously tried, but failed, to sell a \$1 million bond issue to fund the bridges. A local construction company, Foster-Creighton, working with local banks, offered to buy the bonds if the county guaranteed that the company would receive the contract for the entire substructure. The county agreed and later also awarded the superstructure contract to the firm with American Bridge Company bidding as fabricator. Due to Foster-Creighton's inexperience with large-scale bridge work, it sold one-third of the contract to the Gould Contracting Company of Louisville.

Begun August 1907 and opened 4 July 1909, the Shelby Street Bridge is 1,768 feet long and contains forty-eight spans, including four steel trusses and two reinforced concrete trusses. The river spans are a 321-foot pin-connected through Parker truss flanked by two 178-foot pin-connected through Camelback trusses. Span 30 is a 100-foot inverted deck Pratt that is now enclosed within a building on the north bank of the river.

A unique feature of the bridge is the two reinforced concrete truss spans (spans 20 and 21) over the Old Tennessee Central Railroad Tracks (now Louisville and Nashville Railroad) on the west end. These are the only concrete trusses identified in Tennessee. The overall lengths of these spans are 97 and 92 feet; each contains three identical trusses lying parallel to each other. These "six" trusses are on a skew and thus vary in length. An article in a 1909 issue of *Engineering Record* described the two spans as the "most interesting feature" of the bridge. The article stated that from a structural standpoint, the "bottom chords act as ties with the concrete acting as a stiffener and as a protective covering for the steel." Thus, these two spans are technically trusses and partially function as trusses, but they also distribute the forces within the span as an arch does (Creighton 1909; Jones 1909; Nolen 1983; Morrison 1985; Sturtevant 1986b; Waller 1972).

Spans 1 (beginning on the west end) through 19, spans 25 through 29, and spans 31 through 48 are concrete deck girders. All of the girder approach spans rest on concrete bents except for span 10 (over Third Avenue South), span 31, and span 47 (over South First Street) which rest on concrete piers. All of the remaining spans rest on concrete piers.

The original design for the bridge contained a forty-foot roadway for three lanes within the trusses. In addition, the design included a ten-foot sidewalk on the outside of each truss. The middle lane was intended for streetcars, although it was never used for that purpose. This spatial arrangement remained intact during its use as a vehicular bridge with the middle lane reversible during peak traffic hours. Between spans 21 and 22 (the western-most steel trusses) there is a  $76^{\circ}/14^{\circ}$  skew as the bridge realigns to tie into the existing street pattern. There are concrete steps from the bridge down to the ground level west of Third Avenue South, east of Second Avenue South, and east of First Avenue South.

In the 1990s, the Tennessee Department of Transportation, in cooperation with Metro-Davidson County and the Federal Highway Administration, scheduled the Shelby Street Bridge for replacement. The city closed the existing bridge to vehicular traffic in 1998 and renovated it for pedestrian use. The bridge reopened in August 2003.

TABLE III-12: BRIDGES BUILT BY COTTON BRIDGE COMPANY

ELIGIBLE? # IN CH. 6	COUNTY	BRIDGE NUMBER	CROSSING	DATE	DESCRIPTION
No	Warren	89-A0143-02.55	North Prong Barren Fork River	1903	1 Pratt Through



Advertisement *Tennessee Highways*, October 1922.

### FOSTER-CREIGHTON COMPANY, NASHVILLE, TENNESSEE:

Major Wilbur F. Foster had been an engineer for the Confederate Army during the Civil War and was later Nashville's City Engineer. As early as 1871, Robert T. Creighton had worked for him. For a short while after Foster resigned as City Engineer, Creighton also served in that position. Then in 1885 the two men with a third partner, each investing \$500, started a contracting firm. Foster and Creighton shortly purchased the interests of the third person, and the firm operated thereafter as the Foster-Creighton Company.

The firm initially took on small street jobs in Nashville, but after it purchased a quarry near Newsom Station in 1889, expanded to erecting bridge piers. Foster was a skilled map maker and produced several city and county maps. In 1893 the firm purchased a larger quarry that enabled it to expand into more substantial work such as the construction of Lock No. 3 for the Army Corps of Engineers on the Cumberland River.

The Panic of 1893 and the subsequent recession eliminated some of the firm's work. As a result, Major Foster became Works Director for the 1897 Tennessee Centennial Exposition, held at Nashville's West Side Park, renamed Centennial Park (one year after the actual centennial). The Foster-Creighton firm is well known in Tennessee for its association with this landmark event and especially for its erection of a replica of the Parthenon, a focal point of the Exposition. After the Exposition, the city of Nashville converted the Exposition's grounds to Centennial Park and retained the Parthenon. About 1910 Foster-Creighton erected two permanent bridges in the park, one (#66, 19-NonHighway-4) an early concrete arch span. In the 1931, the city of Nashville replaced the crumbling Exposition Parthenon, originally designed as a temporary structure, with a permanent structure of concrete that is now listed on the National Register. Hart, Freeland and Roberts served as architects, the Foster-Creighton firm built the structure, and Wilbur F. Creighton supervised construction.

Major Foster retired in 1906 and Creighton purchased his share of the company. In 1907 Harry Gould, who specialized in railroad bridges joined the firm. Until the mid-1910s when Gould left the firm, the company operated as the Foster-Creighton-Gould Company.

During this period, the firm expanded and worked on a variety of projects. The largest was probably the 1907-1910 construction of the Shelby (Sparkman) Street Bridge (#58, 19-03245-01.47) and the Jefferson Street Bridge (19-03258-00.40). The company built steel and concrete bridges but was especially innovative in the use of concrete. The Shelby Street Bridge contained six concrete trusses, probably one of the first bridges in the country to utilize such a design. In addition, the firm acquired a large limestone quarry in Alabama and provided stone for buildings and highway projects as well as for the iron furnaces in Birmingham. The firm also built river locks and dams during this period. When many of the firm's contracts for railroad bridges began to fade in the 1920s, the firm specialized in highway paving for many years.

The Foster-Creighton Company always worked on a variety of projects and, due to this diversity, survived the Great Depression. Work in this period included a ready-mix concrete company in Nashville that flourished into the late 1940s before the firm sold it. The company expanded during World War II building military cantonments, airbases, and depots. This work included the construction of Camp Forrest at Tullahoma that involved housing for 25,000 troops, the placing of 110 miles of pipe, and 45 miles of roads. After World War II, the firm concentrated on bridge work and large commercial and industrial buildings. In 1969, the firm ceased highway paving and shifted its focus more strongly to bridges. The firm continued in operation until the 1990s (Creighton 1909; Creighton 1972; Creighton 1983; Creighton no date; *Engineering Record* 1909; Foster and Creighton 1941; *Roads and Streets* 1974; Waller 1972).

A 1974 profile on the company attributed its long-term success to the Creighton family. It stated, "Foster & Creighton has survived since 1885 by always having a qualified, trained family member ready for the top job in each generation, and by diversification and good market forecasting" (*Roads and Streets* 1974). Robert T. Creighton brought his son Wilbur Foster Creighton I into the firm as a bridge engineer in 1904, a fresh graduate from Vanderbilt University. He served as president from 1921-1958. Wilbur Foster Creighton Jr. served as the third-generation president from 1958 to 1973 and then as chairman of the board. Wilbur Foster Creighton III joined the firm in the early 1950s following graduation in civil engineering from Vanderbilt University and in 1973 became president of the company and chairman of the board until his retirement.

The survey identified four bridges that the Foster-Creighton Company built in Tennessee (see Table III-13).

**TABLE III-13: BRIDGES BUILT BY FOSTER-CREIGHTON COMPANY**

ELIGIBLE? # IN CH. 6	COUNTY	BRIDGE NUMBER	CROSSING	DATE	DESCRIPTION
Yes: #13	Davidson	19-NonHighway-8	Browns Creek	1888	1 Masonry Arch
Yes: #58	Davidson	19-03245-01.47	Cumberland River	1907-09	1 Parker & 2 Camelback Through, 1 Pratt Deck
No	Davidson	19-03258-00.40	Cumberland River	1907-10	1 Parker & 2 Camelback Through
Yes: #66	Davidson	19-NonHighway-4	Duck Pond	1910	1 Filled Spandrel Arch

**Figure III-10:** Advertisements from the Nashville City Directories in the early 1900s for the Nashville Bridge Company and the W.T. Young Bridge Company. Note that both were located at the same address and had the same phone number.



The Nashville Bridge Company initially built many small truss bridges in the state but gradually expanded throughout the Southeast building bridges across major rivers. It practiced primarily in the South but also shipped bridges to many Central and South American countries. Due to the firm's success in South America, it opened a branch office in Columbia. Research and field work in Tennessee indicate the Nashville Bridge Company was the most prolific company practicing in Tennessee. While the company primarily built truss bridges, it also erected a few concrete arch bridges. On a regional level, it came to be recognized for its work in movable bridges, and the firm erected several along the Gulf Coast. In 1928, during the erection of one of these bridges in Panama City, Dyer's son James died in a construction related accident. By the mid-twentieth century the company claimed to have built over half of all the bascule bridges in Florida (Nashville Bridge Company ca. 1980).

Due to the passage of the Federal Aid Highway Act of 1916 and the subsequent development of standardized plans and greater involvement of state highway departments in bridge design, bridge construction changed in the 1910s. To survive, many bridge companies, including the Nashville Bridge Company, diversified their interests. In 1915 Nashville Bridge Company expanded into the marine field. The first marine project was the construction of a small floating derrick hull for the Army Corps of Engineers. Although World War I curtailed bridge work in the United States, it generated the need for war related equipment. During World War I, Nashville Bridge built four sea-going oil tank barges for the Emergency Fleet Corporation. It also received contracts to provide various ship parts and barges. The company's first tow-boat, named NABRICO, was a small 75 horsepower single screw semi-diesel tug built in 1920, specifically designed to tow sea-going barges down river to New Orleans.

The end of World War I and the infusion of federal money to state highway departments resulted in massive road building programs in the late 1910s and 1920s. With these favorable economic conditions and after its success in marine work, in 1922-1923, the Nashville Bridge Company expanded with the construction of a new steel plant in Bessemer, Alabama. In 1924, the company expanded the Bessemer facility with the erection of a structural steel galvanizing plant for the construction of transmission towers.

After working for the company from 1921 to 1926, Dyer gave his son Harry Buttorff the choice of managing the Bessemer plant or staying in Nashville and taking charge of the Marine Department. Harry Dyer chose to take over operations of the Marine Department. He soon implemented an ambitious plan to build barges on a production line basis and launch them from pivoted arms, a technique never used before. This new method proved very successful and the company's barge business expanded substantially.

Over the years, the Nashville Bridge Company decreased its bridge building and expanded its Marine Department. While many bridge companies closed during the Great Depression, the Nashville Bridge Company continued to operate, in large part due to its diversified interests in marine production. However, in addition to the marine work in the 1930s, Nashville Bridge continued to provide steel for a variety of general construction projects and road projects that included the fabrication and erection of many state highway department bridges.

In 1940, Arthur Dyer stepped down as president of the company and became chairman of the board. His son Harry became president of the Nashville Bridge Company during an expansion period for the firm when it shifted its work focus and erected several new buildings at the Nashville plant. In the late 1930s, in anticipation of possible involvement in World War II, the United States began contracting for war related materials, and the Nashville Bridge Company expanded its operations to meet this demand. Prior to World War II, Nashville Bridge had employed about 1,100 persons, but during World War II, both the Bessemer and Nashville plants devoted their resources exclusively to the construction of defense equipment and employment reached more than 1,300 (Nashville Bridge Company 1961). By 1 May 1944, Nashville Bridge's war production included five U.S. Navy barracks vessels, six U.S. Navy covered lighters, thirty-seven U.S. QMC deck barges, eleven U.S. QMC oil barges, four U.S. QMC water barges, ten U.S. QMC cargo barges, fourteen U.S. Navy subchasers, and two U.S. Mine sweepers. The size of some of this equipment taxed the lock system on the Cumberland River, but Nashville Bridge delivered all of them without seriously damaging the crafts (Douglas 1961:306). For these efforts, Nashville Bridge earned the Navy "E" four times during the war.

Following World War II, Nashville Bridge concentrated on improving the operating efficiency of towboats and barges, decreasing its bridge building activities. The firm's marine efforts included designing and patenting several elements used in the industry. This work earned the company a national reputation for barge and towboat design and construction. Nashville Bridge became the world's largest builder of inland barges.

By the 1960s, the Bessemer and Nashville plants employed over 1,400 workers. The Nashville plant fabricated steel structures and built shallow-draft towboats and river barges. The Bessemer plant fabricated bridges, television and radar towers and operated one of the largest galvanizing works in the entire South. Throughout the twentieth century, Nashville Bridge was a leader in Nashville's industrial community. Local projects included the structural steel dome of the Municipal Auditorium, and the Belle Meade Shopping Center. A 1961 company publication stated that the firm's "most spectacular recent job is the fabrication of a 310-foot

tower to assemble and serve the Saturn Space Ship” (Nashville Bridge Company 1961). This structure was reputedly the tallest structure in the world on wheels (Kerr, West, and Gish file).

By the 1990s, the Nashville Bridge Company complex of industrial and office buildings, still located on the original site on the north bank of the Cumberland River in downtown Nashville, contained eight major buildings, six built between 1909 and 1945. The main building is a six-story office tower erected in 1908-1909, expanded in 1923 and again in 1965. Interestingly, the main public access to the building was at the fifth floor level from an elevated walkway off the Shelby Street Bridge (#58, 19-03245-01.47) rather than from an entrance at ground level on the river bank. The complex includes a circa 1910 fabrication shop that the company expanded circa 1918 and again during World War II. As part of its war related production, the company purchased additional land in the late 1930s and 1940s and about 1938 built a locker house as a changing room for workers. In the 1940s, the company erected three large steel buildings to house shops, boat assembly areas, and welding operations. In 1955, after the city restricted parking for employees on the Shelby Street Bridge, a new bridge ramp to the office was built that included an elevated parking area of steel construction erected between the bridge and the office. The company erected smaller buildings about 1960 and 1981.

In 1969 the Dyer family sold the Nashville Bridge Company to Whale Electronics which later that same year sold it to the American Ship Building Company. In 1972 American Ship sold the bridge and structural building aspects of the company and officially renamed the Nashville office NABRICO. Other owners followed, and while the firm’s name is now officially Trinity Marine, most Middle Tennessee residents still refer to it as the Nashville Bridge Company. By the mid-1990s, the Nashville office employed about 200 workers. In the late 1990s, the City of Nashville purchased the Nashville Bridge Company site as part of its redevelopment project associated with the construction of the Coliseum. The city demolished most of the buildings associated with the Nashville Bridge Company site in 1997-98. In anticipation of relocating from downtown Nashville, several years ago the company had bought a site in nearby Ashland City where it relocated its operations.

The company’s contract book documents that the firm built at least four hundred metal truss and concrete arch bridges in Tennessee. The survey identified seventy-three extant bridges that the company erected (see Table III-24). The survey identified five bridges that the W. T. Young Bridge Company, apparently in conjunction with the Nashville Bridge Company, erected (see Table III-25).

**Figure III-11:** Photograph of the Nashville Bridge Company facility in Nashville prior to its demolition in the 1998 for construction of the Coliseum, which is shown in the background. Nashville Bridge’s six story office tower remains. The bridge spanning the Cumberland River is the Shelby Street Bridge (#58, 19-03245-01.47).

