1

INTRODUCTION

Harrisburg Covered Bridge: This 1969 view shows the Harrisburg Covered Bridge near Sevierville in Sevier County. Prior to TDOT's bridge survey, only a few outstanding bridges such as covered bridges or masonry arch bridges had been identified around the state (Photograph courtesy of the Tennessee State Library and Archives, File #11-46).

2 INTRODUCTION AND SURVEY METHODOLOGY

HISTORIC BRIDGES AND HISTORIC PRESERVATION

In the late 1970s, the Tennessee Department of Transportation (TDOT) began to replace numerous bridges with money provided from different programs but primarily through the Surface Transportation Act of 1978 which funded the Highway Bridge Replacement and Rehabilitation program. The use of Federal funds requires compliance with the Historic Preservation Act of 1966 as well as Section 4(f) of the Department of Transportation Act of 1966. Both provide some protection to historic resources with historicity defined as being listed in or eligible for listing in the National Register of Historic Places. The National Register program is a list maintained by the Keeper of the Register in the National Register of Historic Places program, a division of the National Park Service (Table I-1 contains the eligibility criteria). The list denotes resources in the United States deemed worthy of preservation. Federal agencies and the State Historic Preservation Office (SHPO) can make National Register eligibility decisions at a consensus level pursuant to 36 CFR 800.

This infusion of Federal money for bridge replacement projects brought about the first serious interest in attempting to identify and preserve historic bridges. The 1889-1891 Walnut Street Bridge in Chattanooga (#20, 33-03544-00.12), whose controversial replacement eventually resulted in litigation, was TDOT's first experience in replacing a historic bridge under modern environmental laws. As a compromise measure, the city and state agreed to build the new structure on a different alignment and leave the Old Walnut Street Bridge in place with its disposition to be decided later. Recently, after the bridge sat unused for several years, the city rehabilitated it for pedestrian use. The Walnut Street Bridge project highlighted two needs. First, the people in the state who felt that the Walnut Street Bridge was eligible for the National Register made that decision primarily on instinct rather than because they understood why it was significant. No state or local context existed to explain why this or any other bridge was or was not significant. Second, the problems with this replacement project accentuated the need for early identification of such resources to avoid project delays.

Thus, in the late 1970s, TDOT found itself in the same situation as many other state highway departments: an infusion of money to replace older bridges but no clear idea of which ones were (or were not) eligible for the National Register. At first, TDOT and the TN SHPO made National Register eligibility decisions on a case-by-case basis, sometimes resulting in annoying if not costly delays for bridge replacement projects. Also, since most historians including those employed by TDOT--have a limited background in bridge history, both agencies soon realized that a comprehensive survey of bridges in the state, as well as research into the history of bridge building, was essential to provide historical context for evaluations.

As did many state highway departments across the country, Tennessee implemented a statewide survey in 1981 to determine which bridges were potentially eligible for the National Register. Although TDOT staff conducted the survey, TDOT and the TN SHPO jointly made decisions on planning and methodology in an effort to produce a survey with eligibility

FIGURE I-01:
ELIGIBILITY CRITERIA FOR THE
NATIONAL REGISTER OF HISTORIC PLACES

The quality of *significance* in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

CRITERION A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

CRITERION B. that are associated with the lives of persons significant in our past; or

CRITERION C. that embody the distinctive characteristic of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that components may lack individual distinction; or

CRITERION D. that have yielded, or may be likely to yield, information important in prehistory or history.

Ordinarily, cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

EXCEPTION A. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or

EXCEPTION B. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

EXCEPTION C. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life; or

EXCEPTION D. a cemetery which derives its primary significance from graves or persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

EXCEPTION E. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

EXCEPTION F. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or

EXCEPTION G. a property achieving significance within the past 50 years if it is of exceptional importance.

decisions on which both agencies agreed. The survey identified significant bridges potentially eligible for the National Register as well as bridges that were not significant. This process served both the highway agency and historians. Bridges that failed to meet the criteria for eligibility to the National Register would receive no protection from Federal or state historic preservation laws, and TDOT could replace those bridges in full compliance with Federal and state laws. Historians learned of the existence of a surprising number of significant historic bridges and continue to strive for their preservation. The survey also helped to delineate between those bridges eligible for the National Register and those of such outstanding significance that warranted the strongest preservation efforts. Finally, the survey provided the necessary historical documentation to support agency decisions regarding National Register eligibility; decisions which at times could be unpopular with the general public or local officials.

Appendix A contains a glossary of terms relating to bridge construction.

SURVEY PARAMETERS

One of the first decisions TDOT and the TN SHPO made concerned the geographic context for National Register evaluations. It became quickly evident that using a county context, as is common for many architectural surveys, was not appropriate since there are too few bridges in most counties to provide an adequate basis for comparison and evaluation. On the other hand, both agencies agreed that a statewide context was too broad and did not allow for sufficient regional variation. Thus, the agencies agreed to use the nine state Development Districts, which average in size from six to eight counties, as the geographic context. The Tennessee State Planning Commission initiated Development Districts as planning and development units in 1968. To divide the state's ninety-five counties into units, the planning commission considered criteria such as the general size, shape, geographical orientation, common interests, and existing planning organizations. The commission delineated the following development districts:

First Tennessee: Composed of eight Tennessee counties and extending into Virginia, the district was first delineated in 1965 as an Economic Development District. It includes the Upper East portion of the state and contains the metropolitan-type concentration known as the Tri-Cities (Bristol, Johnson City, and Kingsport).

East Tennessee: Also first formed as an Economic Development District, this area contains a sixteen county area focusing on Knoxville, the state's third largest city. It also contains several very isolated and rural mountainous counties.

Upper Cumberland: This fourteen county area is located on the primarily rural Cumberland Plateau and has been historically isolated from much of the state. The Appalachian Division, which had studied this area since 1965, first proposed this district.

Southeast Region: The Appalachian Division also proposed this ten-county district which contains Chattanooga, the state's fourth largest city. This area, with those districts above, constitutes Tennessee Appalachia except for Coffee and Franklin Counties.

Mid-Cumberland Region: This thirteen county area has as its center Nashville, the state capitol and the state's second largest city. Surrounding it are several towns that are growing rapidly. While the outer counties are still primarily rural in nature, the entire district is experiencing rapid growth.

South Central: Thirteen counties in size, this area is primarily agricultural in nature. It contains the Duck River Basin and the Elk River Basin.

Northwest Region: These last three regions comprise the area west of the Tennessee River and are quite different historically as well as geographically from the remainder of the state. This area contains nine counties.

Southwest Region: The State Planning Office originally defined this as a twelve county area containing Memphis and Jackson, the largest and sixth largest cities in the state. However, about 1973, four counties (containing Memphis) were removed to form their own district.

Memphis-Delta: Memphis serves as a focal point not only for Tennessee but areas in Arkansas and Mississippi. This District contains four Tennessee counties as well as areas in two other states (Tennessee State Planning 1968).

Once TDOT and the TN SHPO established the geographic context, TDOT inventoried a test county to further refine the survey methodology. The agencies selected Warren County as the pilot county since the TN SHPO had previously completed a comprehensive architectural survey for that county. Because TDOT replaces all types of vehicular bridges, the agency assessed all bridges in Warren County built before 1942. However, since this type of

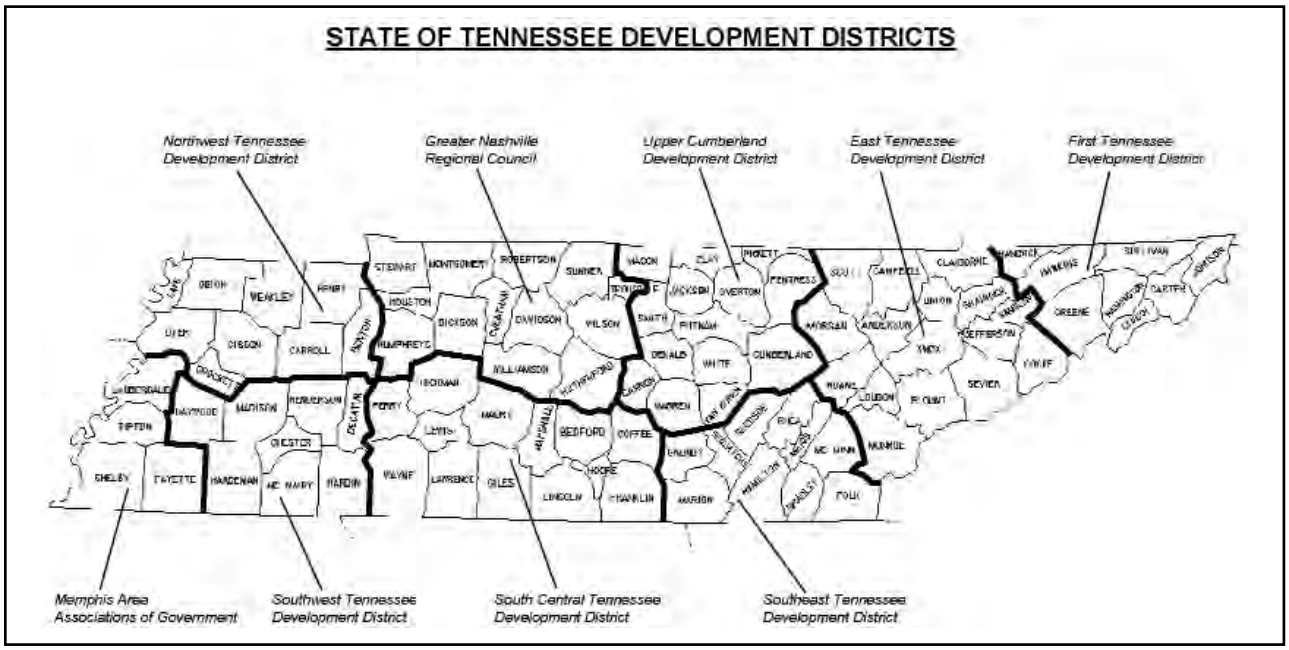

Figure I-02: Map of Tennessee showing Development Districts.

assessment would have involved nearly 20,000 bridges statewide, the TDOT and TN SHPO decided to use a thematic approach, based on engineering type, for the state survey. The agencies included the following bridge types in the survey: metal truss, timber truss, masonry arch, concrete arch, metal arch, and suspension bridges erected through 1941. However, the staff later extended the date through 1945 (pre-1946). Although the survey was completed in a few years, the report was not. By the time the survey report was completed, the time period should have been extended further, but in an effort to complete the survey report, it was not. Appendix B contains charts of these types of bridges built in 1946 or later (post-1945). [The state funded an additional survey in 1998-2000 that evaluated all pre-1950 non-truss and arch bridges.] With the passage of time, a subsequent survey will reevaluate remaining truss and arch bridges.

Although the agencies assumed that other potentially eligible bridge types existed, the selected resource types represented the largest groups of bridges most likely to be eligible for the National Register. The agencies continued to evaluate the remaining bridge types, such as all beam or girder bridges or all arch or truss bridges built after 1945, on a case-by-case basis as projects affected them. Appendix C contains a chart listing bridges of other types that have been determined eligible for or are listed in the National Register. TDOT began the survey in East Tennessee and worked westward since East and Middle Tennessee contained more of these bridge types than West Tennessee did.

The survey involved the evaluation of all "bridges" located on public roads carrying vehicular traffic, which included state and Federal parks. To be a "bridge" under the National Bridge Inspection Standards Program, the structure must be at least twenty feet long. For each of these structures, TDOT maintains a Bridge Inspection Report in the Structures Division. These reports vary in length but contain a structural analysis, evaluation, drawings and photographs. TDOT staff summarized information from the inspection reports on a historic bridge survey form for each bridge. Since TDOT does not maintain records for bridges less than twenty feet long, the survey did not evaluate these structures. A few arch or truss bridges less than twenty feet exist, for instance, the Tennessee Valley Authority built three such arch bridges in Norris in 1934 that are in the Norris Historic District. However, it is fairly unusual to have an arch or truss less than twenty feet since it would normally have been more economical to build a slab or girder bridge of that length. Tennessee contains 7,580 state-owned bridges and 12,010 locally owned bridges on public roads.

When possible, the survey included bridges that once carried public vehicular traffic but, no longer do, or that individuals built on private roads such as driveways, denoted as "NonHighway" bridges. These bridges may be abandoned after being bypassed by a new bridge or have been moved for reuse on private roads or driveways. TDOT identified the nonhighway bridges by contacting county road supervisors, using the State Historic Preservation Office survey files, and through personal knowledge. This admittedly imperfect system may have resulted in the inadvertent omission of some nonhighway bridges.

The survey did not include some bridge types. There are at least 36 natural bridges in Tennessee. A span or arch of stone that creates the appearance of a bridge form these "bridges." They primarily occur in Mississippian-age limestone along the escarpment of the Highland Rim or in Pennsylvanian-age crossbedded sandstone of the Cumberland Plateau. All of these bridges are located in Middle and East Tennessee between Wayne and Hancock Counties. Most of these bridges simply exist and serve no transportation-related purpose.

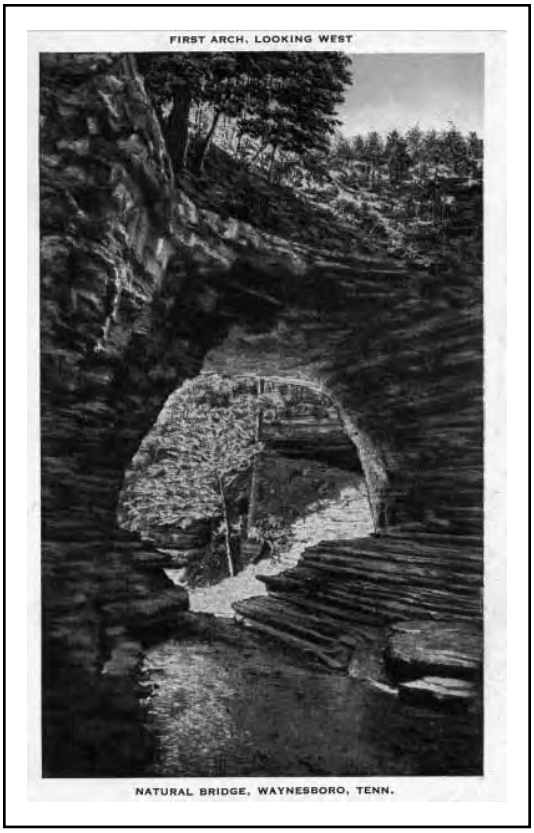

Figure I-03: The Natural Bridge at Waynesboro was once known as Rock Court House because early county court meetings were held here. In the twentieth century, once accessible by rail and automobile, it became a tourist destination with a rustic hotel and landscaped grounds (Author's Collection).

However, a few have served as bridges on small-scale rural roads. Although some of these bridges might be eligible for the National Register as historic sites under Criterion A, they are not man-made engineering structures and do not fall within the range of this survey, and therefore the staff did not include them in this evaluation. These bridges are discussed in Natural Bridges of Tennessee (Bulletin 80) published by the Tennessee Department of Geology (Corgan and Parks 1979).

While it would have been beneficial to include bridges on active rail lines, TDOT Inspection Reports are not available for these bridges and TDOT personnel did not have ready access to files on those bridges. Therefore, the survey did not include railroad bridges except for those bridges that carried highways over railroads and railroads over highways. A further exception was two bridges that engineers primarily designed to carry rail traffic but which also carried vehicular traffic (#14, 79 NonHighway 3 and #77, 79 NonHighway 4). Also, since engineers designed railroad bridges to carry substantially heavier loads than highway bridges, their design and composition vary somewhat from highway bridges.

Five pre-1945 tunnels lined with concrete arches exist in Tennessee: three in Chattanooga and two on New Found Gap Road in the Great Smoky Mountains National Park that the National Park Service built in the 1930s. The arches forming these tunnels are not comparable to the other arches in the survey, and at this point, there is a limited context for evaluating these

tunnels. For these reasons, the survey did not assess the National Register eligibility of the tunnels. However, in 1999, the North Carolina and Tennessee SHPOs, in cooperation with the National Park Service, determined the New Found Gap Road and associated resources, including the bridges and tunnels as contributing resources, eligible for the National Register.

TDOT staff conducted historical research for general context as well as for local historical information. TDOT used other state surveys as well as general historical and engineering references to develop a broad context. For the local context, since county governments built most older bridges in the state, research focused on each county's County Court Minutes or Quarterly Court Minutes. Minutes are available at the Tennessee State Library and Archives in Nashville for most counties, but when not available, the historians visited some individual courthouses to do research. The minutes seldom contained detailed engineering information; at best they contained the date of bridge construction, the name of the bridge company, the cost, and the members of the court who served as a committee. Some entries contained so little information that they were virtually useless. The staff found that the more information one had before using the minutes such as an approximate date, stream crossing, historic name of crossing, adjacent property owners, or the dimensions of the bridge the easier it was to

Figure I-04: 1941 view of State Route 133 through Backbone Rock, Johnson County; note the ice cream and snack shop in the lower right of the photograph (Photo courtesy of State Archives, Conservation Collection, Bridges, Highways & Roads, Box 10, File 35).

Figure I-05: View of the 1929 Wilcox Tunnel through Missionary Ridge in Chattanooga.

identify a bridge in the minutes. Also, it was found that one should follow through the minutes for several years even after apparently locating the information on a specific bridge since bridges often washed out or were relocated as road patterns changed.

TDOT also consulted local newspapers, but these rarely had stories on small rural bridges being built unless the newspaper linked the stories with the county court meetings or covered them informally in the neighborhood news. For instance, the Fayetteville Observer contained letters to the editor about the Stone Bluff Bridge (#17, 52 A0487 04.85) as well as several references in the weekly Dellrose News column. One column (6 June 1889) mentioned that one of the workers had been sick but that the arrival of his wife had "restored him to perfect health." This column also said that the bridge was on the road going by Mr. W. B. Stevenson's residence "which he will have improved and beautified" (Fayetteville Observer 1889 1890). On the other hand, coverage of major downtown bridges was often extensive and covered a period of years from the initial proposal to the dedication ceremonies.

*[*NOTE: Bridges are identified throughout this survey by two numbers. The first number, for example on the Stone Bluff Bridge, "#17" refers to its sequence in Chapter Six of this report that contains an assessment of each historic bridge. TDOT assigns a bridge number to each structure, for example "52 A0487 04.85," and any information TDOT has about that bridge is keyed to that number. These numbers go from the general to the specific, and no two bridges have the same number. The first number indicates the alphabetical sequence of the county in the state. The Stone Bluff Bridge is in Lincoln County, alphabetically, the fifty-second county in the state. The second number indicates the number of the road on which the bridge is located. Roads numbered with letters of the alphabet such as A0163, B0202, etc. indicate county roads. State Routes are indicated by SR (SR266), Federal Aid Roads by five numbers without a letter (00966, 03486) and interstates by an I (I0155). As explained elsewhere, NonHighway indicates that it is not on a public vehicular road. The last number is a log mile and indicates the location of the bridge on that specific road. For instance the Stone Bluff Bridge is located 04.85 miles from the beginning point of the road. If the text contains only TDOT's bridge number, then the bridge is not eligible for the National Register and Chapter Six does not contain an individual discussion pertaining to it.]*

The state highway department began to build bridges in the late 1910s, and TDOT has plans for nearly all of the bridges it has erected. Also, the state highway department's annual reports contain contract letting and completion dates, the name of the contractor, the amount of the contract, and whether the source of those funds is state or Federal. During the Great Depression, the reports specify which Federal program funded the projects. For many of the earlier state projects, the county minutes also contain extensive information since the counties provided part of the funds for the earlier projects.

For every bridge inventoried in the survey, TDOT staff reviewed bridge inspection reports, filled out survey forms, and conducted research. The staff then scored each bridge. [The text below discusses the scoring system in detail.] From this material, the staff made an initial cut and field reviewed a variety of bridges, not limited to but including all bridges initially thought to be potentially eligible. As TDOT finished each development district, TDOT and the TN SHPO held meetings to assess eligibility.

The only exception to this process was for continuous trusses. Since the state contained relatively few of these and since they skewed the scoring system, the agencies evaluated them as a group after completion of the state survey. For other bridge types, when the staff completed the work in a district such as the Upper Cumberland Development District, the agencies held a meeting and made tentative eligibility decisions. In theory, the agencies

Figure 1-06: Postcard view of the Hurricane Creek Bridge across Center Hill Lake in Dekalb County. The Army Corps of Engineers erected this contiuous truss in 1948-1949. It is not included in the survey since it was built after 1945 (Author's Collection).

intended for these decisions to be somewhat preliminary and subject to further review after completion of the statewide survey. In reality, due to the rapid replacement of bridges, the state replaced many of the reviewed bridges before the staff could complete the survey. Thus, with a few exceptions, the initial decisions stood. Even so, once the staff finished the entire survey, TDOT and TN SHPO held another meeting to review these bridges again. While the first review had focused on individual scores within development districts, the bridges were rearranged for the final review in chronological order (the same as in this publication). The chronological order helped the reviewer evaluate each bridge on its own merits as an engineering resource rather than as a component of a development district. From this process, the agencies determined a number of bridges eligible for the National Register at a consensus level pursuant to 36 CFR 800.4(c).

Initially, the primary purpose of this survey was to determine which bridges in the state were eligible for the National Register. However, as the number of bridge replacement projects increased, the staff realized that the state should have a cohesive approach to the preservation of historic bridges, including a discussion of preservation activities and a list Tennessee's most significant bridges. Chapter Seven discusses the first component of this preservation effort. TDOT did not implement the second goal, a list of the state's most significant bridges. Although such a list would help planners and citizens to pinpoint which bridges are most significant and thus most worthy of preservation efforts, creating the list also presented problems. For instance, staff members had philosophical differences concerning the standards for inclusion on such a list. Should it include only bridges of state or national significance? The best example of every type and subtype? An example of every bridge company? Bridges representing most historic themes under Criteria A and B? Finally, were all bridges in a statewide thematic survey significant at a state level? Further, the Federal Highway Administration believed that groups opposing a replacement project for a highly rated bridge might use such a list to delay or halt replacement. On the other hand, some members of the TN SHPO staff believed that the list would encourage people to ignore and not attempt to preserve bridges not on the most significant list. In short, some staff members believed that such a list had the potential to undermine worthy program objectives.

A further complication was trying to develop a list that would meet the requirements of a Bridge Preservation Plan as set forth in a January 1985 memorandum of the Federal Highway Administration. This memorandum set forth an agreement between that agency and the Coast Guard that for historic bridges requiring a Coast Guard permit, the Federal Highway Administration would prepare an Environmental Impact Statement if the bridge were on a TN SHPO approved list of bridges deemed "important for preservation." DOTs could process the environmental documentation for the replacement of historic bridges not on that list as a Categorical Exclusion or as an Environmental Assessment. Both groups found the wording of this memorandum difficult to interpret. The TN SHPO took the position that since the definition of National Register eligibility was "worthy of preservation," that it would not agree that any National Register eligible bridge was not "important for preservation." Since the thrust of this 1985 memorandum was to develop a two tiered context for historicity which included a list of National Register eligible bridges as well as a shorter list of those eligible bridges that were most important for preservation, the Federal Highway Administration would not agree that within the context and wording of this memorandum, that every National Register eligible bridge was important for preservation. Consequently, the agencies decided not to develop a list of the most significant bridges.

HISTORIC EVALUATION

Most historians do not have extensive experience in evaluating the historic significance of bridges nor are most engineers thoroughly familiar with the criteria of eligibility for the National Register. To enable historians and engineers to better assess historic bridges, many states developed a point or grading system to help determine the National Register eligibility of bridges. While Tennessee used such a point system as an aid in the decision making process for metal trusses, the state actually used the National Register criteria as set forth in 36 CFR 60.4 to assess significance. TDOT staff also made an attempt to develop a rating system for concrete arch bridges, but due to the homogeneity of bridges located in Tennessee, too few distinctions or differences in scores existed for the rating system to be useful. For the other bridge types inventoried, not enough bridges existed for a rating system to be necessary.

However, in an attempt to focus on metal truss bridges as resources which are different from other types of historic or architectural structures, Tennessee (borrowing heavily from a grading system developed by Virginia) devised a 29 point system based on the bridge's structural composition pursuant to Criterion C of the National Register and historical associations pursuant to Criterion A or B. This grading system focused on the technological aspects of a bridge and its historical background. The survey did not consider other factors, such as the setting, as significant. The distribution of points among the factors reflects this approach. (See next page.)

TDOT and TN SHPO used this point system only as a guideline to help identify significant bridges; at no time did they use a pre-determined scoring level as a cut-off point for eligibility. In a state where there are many bridges of outstanding significance, perhaps a pre-determined cut-off point for eligibility would have been practical. However, most of Tennessee's bridges are significant as representative examples. Also, assessments of historical significance and integrity are key elements in National Register eligibility, yet a scoring system did not adequately weigh these elements. Thus, TDOT used its scoring system only as a flexible guideline in the decision making process and not as a definitive answer.

This approach had several advantages. First and probably most importantly, it forced those working on the survey to look beyond the aesthetic merits of old bridges and to seriously evaluate them as historic and engineering resources. It helped all concerned to pinpoint significant aspects of bridges and then to focus on those areas rather than just viewing each as a "neat old bridge." Another advantage of the point system was that it provided a logical and consistent basis for eligibility decisions. It also helped to assess the relative importance of a bridge within a statewide context. One disadvantage of the rating system was that certain bridge types, usually the 1920s and 1930s state highway department bridges and former railroad bridges, automatically scored well due to their size or composition, even though they were not necessarily significant.

Although the survey did not develop a scoring system for the other types of bridges inventoried in this survey, the information and experience gained through the evaluation of metal trusses did have parallel applications for those types. The survey used this engineering background and historical context as a basis for eligibility decisions for the remaining bridge types.

FIGURE I-07:
POINT SYSTEM FOR EVALUATION OF METAL TRUSS BRIDGES

_____
(SCORE)

_____ _____
(BRIDGE NUMBER) (NAME AND LOCATION)

A.	TECHNOLOGICAL SIGNIFICANCE	
1.	Analysis of Structure	
a.	patented innovations _____	
	_____	2
b.	number of truss spans (three or more spans)___	1
c.	length of individual span_____	1
d.	Integrity _____	
	unaltered truss (may contain replaced members)	1
	original substructure	1
	original location	1
e.	materials _____	1
f.	special decorative features_____	1
g.	special technological features_____	2
2.	Rarity of Truss Type _____	
a.	common	0
b.	variation of a common style	1
c.	unusual (two to four extant in development district)	2
d.	rare (one extant in development district)	4
B.	DOCUMENTATION	
1.	Builder _____	
a.	unknown	0
b.	known, significance undermined	1
c.	known, prolific builder or Tennessee company	2
d.	known, unusual or significant designer	3
2.	Date _____	
a.	1931-1945	1
b.	1921-1930	2
c.	1901-1920	3
d.	1890-1900	4
e.	pre-1890	5
3.	Historical Significance _____	
a.	undetermined	0
b.	local	1
c.	state	3
d.	national	
C.	SETTING	
1.	Aesthetics _____	1
2.	Located in or adjacent to a designated scenic or historic area (e.g. Scenic River, National Register property)____	2

The issue of what constituted historical significance under National Register Criterion A or B for a bridge was difficult to resolve. Also, significance does not lend itself to being defined quantitatively in a scoring system. It is a subjective issue that must be decided on a case by case basis while taking into consideration local as well as state and national historical trends. However, the TN SHPO and TDOT agreed on general guidelines in applying historical significance. Normally, a twentieth century bridge located at an old or even historic crossing derives little historical significance from that earlier crossing. The survey evaluated the existing bridge on its own merits and not on what had happened at the site or near it prior to the construction of the existing bridge. Another example concerns new bridges at historic ford crossings. Many bridges were often not at the precise location of the historic ford crossing but simply in the same general transportation corridor. Again, the bridge itself did not date to the same period of significance possessed by the ford crossing, and consequently, it was not eligible under Criterion A. However, some builders erected bridges that incorporated earlier substructures. When known, the survey noted the presence of an older substructure, and in some cases, this added to the significance of a bridge. An example is the Liberty Bridge (#59, 21 A0028 01.21) in the Liberty Historic District. On a few occasions, bridges derived significance from their association with certain persons, events, or circumstances. However, just because a bridge was named in honor of a person or because a significant person worked to acquire funding for the bridge did not necessarily render the bridge eligible under Criterion B. Chapter Two contains a history of bridge building in Tennessee that provides context for significance under Criterion A.

Some bridges in the state were clearly significant. However, most of the bridges that the staff selected were average or representative in nature. Therefore, when many bridges scored comparably, the staff chose a cross-sampling of bridge companies, truss types, and design features in an effort to include as many types and structural elements as possible. This system is sometimes referred to as the "Noah's Ark" approach.

Chapter Three contains the historical context of bridge companies, as relevant under Criterion C. Using a "Noah's Ark" approach, the staff attempted to select eligible bridges that represented various bridge companies that worked in Tennessee. The agencies agreed, that while it was not essential to have an eligible bridge by each company that practiced in the state, it was important to represent the work of as many companies as possible while balancing other factors such as the truss type or engineering features. However, the survey made an effort to include bridges that represented the work of major companies whose innovations greatly influenced bridge building. In addition, the agencies agreed it was important to have the work of Tennessee companies, even though they might be small firms, represented as often as possible.

Chapters Four and Five provide the context for the technological component relating to Criterion C. The survey selected certain bridges not only to represent typical bridge types and building techniques but also to include unusual features of bridges such as rare patented components, numerous spans, unusually short or long trusses, or special decorative features, while also assessing the bridge's integrity. The survey made an effort to include a cross-sampling of representative bridges that contained atypical features. It has been said that the National Register is a list of everyone's mistakes because nominations often focus on a property being the "only one" of a kind. Quite often these rare designs are an experimental effort by a designer who then found that its intended advantages did not justify its expense or complexity. Examples might be a beaded T angle, a supplemental horizontal tension bar, or the

K truss bridge. Comparable to some extent are elements generally inferior in design but which were often cheaper or easier to build such as channels with lacing top and bottom, cotter pins, or the Bedstead truss. Unusual features might include splayed verticals or buttressed verticals. Essentially, none of these features were innovative designs that greatly influenced the history of bridge building. Yet the staff believed that the survey should document these anomalies because of their notability as a reflection of the diversity of building practices within the industry. Also, their selection ensured that a wide variety of bridges would be documented in the survey, in this publication, and (if applicable, as mitigation when replaced) for the Historic American Engineering Record or for the files of the TN-SHPO.

Most of the bridges determined eligible, 99 of a total of 156, possessed significance under Criterion C as representative examples of certain bridge types, construction features, or the work of certain companies. In addition, 53 bridges primarily eligible under Criterion C had supplemental significance under Criterion A and two bridges had supplemental significance under Criterion B. Table I-01 shows eligibility by National Register criteria.

TABLE I-01: ELIGIBILITY BY NATIONAL REGISTER CRITERION

ELIGIBLE UNDER	
Criterion A	2
Criterion B	0
Criterion C	99
Criteria A and B	1
Criteria A and C	53
Criteria A, B, and C	1
TOTAL	**156**

When a bridge possessed sufficient historic significance to render it eligible under Criterion A or B, then other factors such as its truss type or technological features, typically evaluated under Criterion C, were essentially irrelevant as long as the bridge retained its integrity. Indeed, the survey found that any bridge that lacked integrity, regardless of its score due to engineering aspects or historical background, was not eligible. For example, the Beason Creek Bridge (36 NonHighway 2) is an unusual continuous Bedstead truss, but the removal of members has severely damaged its integrity and it is not eligible for the National Register.

Since an inherent design feature of metal truss bridges was their mobility, having been relocated did not necessarily disqualify a bridge from being eligible if its primary significance was under Criterion C. However, the survey gave points to a bridge on its original location and if it had its original substructure.

The scoring system also awarded points according to the age of a bridge. Since bridges are generally considered as having a life expectancy of 50-75 years, their survival does indicate

some level of technological achievement. Thus, the older bridges received more points than later bridges. The survey, which was completed in the mid-1990s, only evaluated bridges built through 1945 except for five bridges built between 1946 and 1958. The 1945 date conformed to National Register rules that note that properties less than fifty years old are not eligible unless they possess exceptional significance. The survey evaluated three post-1945 TVA bridges since the context for TVA's involvement (1936-1950) spanned the 1945 cut-off date. Also, the survey evaluated two continuous truss bridges built after 1945 because TDOT had scheduled them for replacement. TDOT continues to evaluate the eligibility of the post-1945 truss bridges on a case-by-case basis.

The visual and environmental setting of a bridge received little weight in the point system. Since the scenic value of most bridges has little to do with National Register eligibility, the survey considered that as relatively unimportant. While the setting may contribute to the sense of place, the area of significance for most bridges is their representative nature as certain types of trusses or their unique engineering features. In other words, the survey found the best or only example of a certain bridge type eligible regardless of its setting. However, in choosing representative examples (where there might be several basically identical bridges), the staff made an effort to choose bridges that were in historic districts or historic settings. When evaluating comparable bridges, when possible, the staff chose abandoned bridges since these bridges are often less endangered than many bridges still in use. While this may seem ironic, bridges in use are very likely to be replaced, and it is now uncommon to abandon the old bridge once a new bridge has been built. On the other hand, little money is available to demolish previously abandoned bridges, and these old structures may remain for years perhaps further deteriorating but still in existence and appreciable as a ruin.

The proposed National Register boundaries for each bridge are the superstructure and substructure from abutment to abutment.

CONCLUSIONS

The staff assessed the National Register eligibility of 856 bridges in the course of this survey. Of these 856, TDOT and TN SHPO agreed at a consensus level that 156 (18%) were eligible. Table I-02 shows the distribution of eligible bridges by type. Appendix D contains a summary list by county.

Since the survey continued over a period of years, replacement projects resulted in the demolition of several National Register eligible bridges during that time. This publication includes the demolished bridges, not only as a form of recordation, but to show the context for the decision making process.

TABLE I-02: NUMBER OF INVENTORIED BRIDGES

TYPE	TOTAL INVENTORIED	ELIGIBLE
Masonry Arch	20	12 (60%)
Wooden Truss	25	9 (36%)
Queenpost	16	5 (31%)
Howe	2	1 (50%)
Kingpost	7	3 (43%)
Suspension	1	1 (100%)
Metal Truss	502*	91 (18%)
Continuous	18	8 (44%)
Simple	484	83 (17%)
	*Also evaluated eight post-1945 trusses	
Concrete Arch	307	42 (14%)
Filled Spandrel	256	29 (11%)
Open Spandrel	22	9 (41%)
Filled Spandrel-Ribbed	29	4 (14%)
Metal Arch	1	1 (100%)
TOTAL	***856***	***156 (18%)***