

## **4.0 EVALUATING MARYLAND'S SMALL STRUCTURES**

### **Introduction**

The historic context presented in Sections 2.0 and 3.0 of this report provides important background information that can be used to assess the National Register eligibility of small structures on Maryland's roadways. In order to do this, the questions below must first be answered:

1. Is the structure associated with an important historic context?
2. How does the context relate to the criteria of eligibility for the National Register as set forth in 36 CFR 60.6?
3. Does the structure possess integrity--does it retain those features necessary to convey its historic significance?

These three questions are addressed below. This section concludes with a discussion of the potential National Register eligibility of each of the small structure types described in Section 3.0.

### **4.1 Significant Contexts**

#### **Is the structure associated with an important historic context?**

Historically, small structures, along with bridges, fit within the larger context of Maryland transportation history and the development of the state's roadway system. Within their own context, small structures do possess importance during certain, limited periods of the development of the state's road system.

Since all known extant small structures date to the nineteenth and twentieth centuries, a small structure dating earlier could possess significance as a sole or rare surviving example of pre-nineteenth century small structures in Maryland. It could also provide information on the construction techniques of the state's early small structures.

In the first half of the nineteenth century, two events are significant in the development of small structures: the construction of the National Road and the "turnpiking" of roads throughout the state. Structures from this era could possess engineering significance as examples of traditional building technologies such as masonry arched construction. They could also possess significance for their association with important roadway networks such as the National Road, a resource of both state and national significance.

In the twentieth century, there are two significant contexts under which small structures should be evaluated. The first is the ca. 1900-1911 period which witnessed the promotion of concrete as a "permanent" construction material for small structures (and bridges) and the introduction of reinforced concrete around 1903. This was an experimental period and concrete structures such as arches or arched culverts dating from this early period could be significant for this association.

The second significant period of the twentieth century is between 1912, when the first Standard Plans for small structures (and bridges) were issued by the State, to 1948 when major changes in roadway planning and technology occurred. Certain concrete small structures built according to the Standard Plans and unaltered could be significant.

Small structures are associated with other historical contexts (e.g. prison labor, the WPA) are interesting but are not particularly significant to small structures. In addition, often large structures (i.e. bridges) better represent many of the areas and periods of significance, particularly those relating to significant engineering technologies and historic events.

## **4.2 National Register Criteria of Eligibility**

### **How does the historic context relate to the criteria of eligibility for the National Register as set forth in 36 CFR 60.6?**

The historic context for small structures possesses limited areas and periods of significance. Although in some ways the context is identical to that of bridges, there are also major differences. For example, bridges can possess significance for their association with crossings important in the development and growth of the state, as examples of a solution to a difficult engineering challenge, as examples of the work of prominent engineers or for their architectural or artistic distinction. Small structures would rarely possess such significance.

Small structures do fit into the same significant contexts as bridges when their association with the development and advancement of Maryland's roadway system is considered. In this instance they can be considered as either integral elements of a larger system or as individual examples of a technology specific to an important time in the development of roadway structures in Maryland.

Below is a discussion of the application of the National Register Criteria of Eligibility to small structures. This discussion focuses on individual eligibility but also provides guidance for evaluating small structures within the context of a historic district. In all instances of potential National Register eligibility discussed below, the issue of integrity must also be considered.

Criterion A--*A small structure associated with events that have made a significant contribution to the broad pattern of our history.*

There may be cases where a small structure could be eligible for the National Register under Criterion A for its association with a significant historical event such as a military battle. Although the occurrences would be very limited, a small structure could also be individually eligible for the National Register under Criterion A if it stands on a roadway highly significant in the early growth and development of the state (or United States) and if it dates to the period of the development of the roadway. For example, a nineteenth century masonry arched small structure on the National Road could be individually eligible for the National Register for its association with this highly significant road. A factor that increases the significance of these early nineteenth century masonry arched structures is their limited surviving numbers. Other very early nineteenth century

structures associated with the major turnpikes could also be significant under this criterion. (Many of these structures would also be eligible under Criterion C.)

Some twentieth century roadways are significant but it would be very rare for a small structure on these roads to be individually eligible. Most assuredly, there are many extant examples of the small structures associated with these twentieth century roads, thus reducing the significance of an individual small structure.

Criterion B--*A small structure associated with the lives of persons significant in our past.*

A small structure would generally not possess significance under this criterion because construction of individual small structures is rarely, if ever, linked to significant individuals.

Criterion C--*A small structure that embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master or possesses high artistic values.*

Small structures would most likely qualify for individual listing in the National Register under this criterion. Structures eligible under this criterion would generally relate to the significant historical contexts summarized above in Section 4.1.

Although the pre-1800 period is not amongst the two significant historical contexts for small structures, a surviving small structure dating from the Colonial period up to around 1800 could be individually eligible as an example of a structure that embodies the distinctive characteristics of an era or method of construction, particular to the early centuries of the state's history. There are, however, no known extant small structures from this era.

Masonry arched structures built in the first half of the nineteenth century are illustrative of the early development of the state's roadway system. They are also significant for their method of construction which is rarely used today, and as examples of craftsmanship in the individuality of some of the structures. Both brick and stone arches are examples of structures that could be individually eligible. The numbers of surviving small masonry arches are limited, a factor that increases their significance.

Concrete and reinforced concrete small structures such as arches and arched concrete culverts built in the first decade of the twentieth century (up through 1911) are illustrative of a period significant in the history of small structures (and bridges). During this period, concrete was introduced and heavily promoted as a "permanent" building material for roadway structures. Apparently, there were failed efforts at concrete construction during this early period, indicating that the new type of construction required the assistance of builders with some knowledge of the new structural building material. There are no known concrete small structures dating to this period. A small structure datable to this period could be eligible for the National Register as a rare surviving example of early twentieth century concrete construction of small roadway structures.

Other small structures could be individually eligible as examples of structures built according to the Standard Plans issued by the State Roads Commission in 1912, 1919, 1924, 1928, 1930, 1931 and 1933. Several structure types and construction materials

were included in the Standard Plans but not all types would be considered eligible. For example, the early Standard Plan slab and girder structures were considered significant because they promoted a "new" technology, while the timber and metal Standard Plan structures were simply carryovers from the nineteenth century. There are surviving examples of Standard Plan structures on the state's roadways. An unaltered example of selected Standard Plan structures could be significant under this criterion.

Criterion D--*A small structure that has yielded, or may be likely to yield, important information in history or prehistory.*

Although the occurrence would be rare, a small structure, such as a masonry culvert that is datable to the Colonial period, could be individually eligible for the information it could provide on construction methods of that era.

### **Evaluating small structures that are not individually eligible**

There are instances in which small structures may not be individually eligible for the National Register but may be considered contributing components of a historic "district." In this case, "district" can be defined in two ways. The first is what we commonly think of as a district, that is a grouping of buildings historically united by plan or physical development. A historic roadway, however, can also be considered a historic "district."

In order for a small structure to be a contributing component of a historic district that is comprised of a grouping of buildings and other resources, it would need to be determined whether the small structure was built and/or upgraded within the district's period of significance and whether it still retained sufficient appearance to represent the period of significance.

Thinking of a historic roadway as a "district" works in the same way. Its period or periods of significance and whether the small structure fits within that period would both need to be determined. One roadway, the Baltimore-Washington Parkway, is the only roadway in the state currently individually listed in the National Register. The National Road is highly significant and portions of the roadway could be National Register-eligible. Other roads may be eligible as a "district" but no historic context for these resources has been developed. Spero's report contains a good outline of some roads thought to be significant in the state's development (Spero 1995: 29-31). Besides the National Road and the Baltimore-Washington Parkway, two examples of other roadways that may possess significance are the Rock Creek Potomac Parkway and the Crain Highway (ca. 1920s-35). The latter, the first major new road constructed on entirely new location by the State Roads Commission, could be considered partly or wholly eligible as a "district" because it reflects the early twentieth century trend toward standardized road and structural design (including culverts).

If a pre-1948 small structure is proposed for renovation or replacement and its small structural type is not individually eligible, a determination should be made of whether the structure is within a listed or potentially eligible historic district, including linear roadway districts. A determination would then be made as to whether the structure fits within the district's period of significance. Alterations or changes to a structure during the period of significance of the district may be significant. An example is a renovated structure, possessing integrity, whose changes reflect a historic trend that characterizes the district.

### 4.3 Integrity

#### **Does the structure possess integrity--does it retain those features necessary to convey its historic significance?**

To be individually listed in the National Register, a resource must not only meet one or more of the Criteria of Eligibility but it must also have integrity. In a small structure, integrity would be related mainly to design, materials and workmanship but, of course, integrity elements such as location and feeling also would apply. To determine if a structure possesses integrity, it needs to be ascertained whether the structure retains the elements of design and the materials necessary to convey the period in which it was constructed. Integrity applies to the structure's appearance as opposed to its state of repair or functional adequacy.

There are also different levels of integrity required for different types of bridges. Issues such as the rarity of a structure that fits within a significant historic context and whether it is eligible under only one or more than one of the National Register criteria must be considered. For example, a masonry culvert surviving from the Colonial era and buried within other modern structures (e.g. slab or box extensions) could be eligible although its integrity has been compromised by the addition of modern structures to both outer edges. It could be significant under both Criterion C for its design as a rare surviving example of an Colonial-era culvert and under Criterion D for its information potential. Another example is a small structure on the National Road. Because of the high significance of the road, the structure could incur some changes and still possess sufficient integrity to be eligible for the National Register. This is because there is only a small surviving number of these resources and they possess two areas of significance: historical (Criterion A) and engineering (Criterion C).

The small structures of the twentieth century must be evaluated differently because they are generally only eligible under Criterion C and because they are substantially more common and are less significant than the previously discussed structural types. In order to be considered eligible for the National Register, twentieth century small structures should be unaltered--in essence, they should retain all of their character-defining elements. For example, a slab structure built in 1920 according to the 1919 Standard Plans must retain its incised parapet rail, the structural dimensions as illustrated in the plans, its 24-foot wide roadway and its concrete abutments and/or wingwalls. A 1933 slab structure would have to retain its open rail, its structural dimensions as illustrated in the plans, its 30-foot roadway and its incised concrete abutments and/or wingwalls. In both instances, the roadway surface could be modern because that is not a character-defining element of the structure.

### 4.4 Potential Eligibility of Small Structure Types

The structural types discussed in this section are described in detail in Section 3.0. This section addresses the potential individual National Register-eligibility of each of the following small structure types.

- Masonry--arch
- Concrete--slab, box culvert, girder/beam, arch and arched culvert, rigid frame

- Metal--beam and arches
- Timber--beam
- Pipes--pipes and pipe arches

As stated earlier in this section, small structures have limited areas and periods of significance. Of the small structures that do fit into the defined significant contextual periods, it is likely that few would possess sufficient integrity to be eligible for the National Register.

Assessing the eligibility of small concrete structures of the twentieth century is a particular challenge. Many of the early state highway department bridge surveys conducted throughout the United States did not address concrete structures and, if they did, concrete arches were often felt to be the only type considered significant. In recent years, some states have updated their original bridge surveys to address the wide range of twentieth century concrete bridges.<sup>1</sup>

Research undertaken for this study has included a review of existing small structure files at the State Highway Administration (SHA), interviews with personnel of the SHA's Office of Bridge Development, technical assistance from bridge engineers in the private sector, a review of Spero's report and the bridge surveys of numerous other states, correspondence with county and city highway departments and development of the historic context for small structures in Maryland (Sections 2.0 and 3.0 of this report). This research and analysis provides sufficient background information to determine what small structures could be considered eligible for the National Register. These small structures may be eligible in limited, well-defined areas and periods of significance and must possess medium-high to very high levels of integrity. The research has also provided sufficient information to make a determination that certain types of small structures do not fit into any significant historic context and thus are not eligible for the National Register.<sup>2</sup>

### **Character-Defining Elements**

To assess the integrity of a small structure, the elements composing the structure and their importance to conveying the structure's period of significance must be analyzed. Such elements are referred to as *character-defining elements*. Other elements add to the significance of a structure such as bridge plaques which often play a role in dating a structure and establishing its significance (e.g. builder). Regarding ornamentation, if applied to the structure, it is considered as a separate element. Integral ornamentation such as incised panels on rails or horizontal scoring of wingwalls, however, is assumed under the element itself (e.g. rail, wingwalls) (Spero 1995: C-24). Other elements that

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<sup>1</sup> A publication of interest since it relates so closely to the concrete small structures addressed in this study is the *Survey of Non-Arched Historic Concrete Bridges in Virginia Constructed Prior to 1950* prepared for the Virginia Research Council (Miller 1996). The study addresses the National Register eligibility of bridges, not small structures, but many of the types discussed are identical to those of the small structures discussed in this report (e.g. slab, girder, rigid frame). It is interesting to note that of the 1,420 non-arched concrete structures evaluated under National Register criteria during that study, fewer than a dozen were found to be individually eligible (Miller 1996: iii).

<sup>2</sup> Certain contexts such as significant crossings, engineering involvement, and artistic statements are better represented by bridges rather than small structures.

compose a structure are of secondary (moderate) importance or are incidental to the structure's essential characteristics (tertiary).

Concerning structures built according to the Standard Plans, because they were built in large numbers and are not uncommon today, they must possess a very high level of integrity and all of their character-defining elements to be individually considered eligible for the National Register.

The potential for individual eligibility of each structural type is discussed on the following pages. The discussion includes a list of the components of each structure and supplies a rating of the significance of each component in defining the structure's character. The definition of each rating assigned to the structural components is shown below in Table 4.1. This rating system is a simplification of the system presented in Spero's 1995 Historic Bridge Context Report and is designed to be easier to utilize for the target users of this report. The purpose of this report is to assist users in making eligibility determinations for small structures on a *case by case* basis while Spero's report will be used by the historic bridge committee to *comprehensively evaluate* the state's historic bridges.

**Table 4.1**  
**Key to Structural Component Importance Rating**

<b>CDE</b>	<b>Character-Defining Element</b> <i>Very Important elements--structural components that are key to conveying the structure's period of significance.</i>
<b>A</b>	<b>Added Significance</b> <i>Elements, beyond CDEs, that add to the significance of a structure. For example, an extant plaque, plate or imprint could increase the significance of a structure and could provide important historical information.</i>
<b>S</b>	<b>Secondary (Moderate) Importance</b> <i>Less crucial to essential characteristics but can add to structure's historic character.</i>
<b>T</b>	<b>Tertiary</b> <i>Incidental to the structure's essential characteristics.</i>

#### 4.4.1 Masonry

<i>Period(s) of Significance</i>	<i>Pre-1800, First half of nineteenth century</i>
<i>Potential Applicable National Register Criteria</i>	<i>Criteria A C, and D</i>
<i>Integrity Considerations</i>	<i>Must retain all CDEs under Criterion C. Under Criteria A and D, some alterations may be acceptable.</i>

There are no known pre-1800 small masonry (stone, brick or a combination) arches or arched culverts. There are, however, extant early nineteenth century structures of this type along the early roads and turnpikes of the state, particularly in the Appalachian and Piedmont regions of the state, where stone was readily available. There may be twentieth century masonry small arches, particularly in areas where aesthetics in design were a major consideration, but it has been much more common in the twentieth century to face concrete structures in masonry for aesthetic appeal rather than to use masonry construction.

Small masonry arches or arched culverts dating up to around 1850 could be eligible for the National Register under Criterion C because they “embody a craftsman tradition derived from Colonial and European sources” (Spero 1996: C-13). These same structures could also be eligible under Criterion A if they are associated with the development of early and significant roadways in the state. A pre-1800 structure such as a masonry culvert could also be significant under Criterion D for the information it could provide on early road drainage construction techniques.

Concerning integrity, because of the limited numbers of surviving pre-1850 small masonry arches and arched culverts, some alterations to the structure may not damage its integrity to a point where it would not be considered eligible, particularly if a structure is also eligible under Criteria A or D. For example, a pre-1800, beautiful arched culvert of squared granite blocks could be eligible under Criterion D even if it has been widened on both sides and is now encased within modern structures. The arched structure would generally have remained intact during the widening and could still be eligible. A stone arch built along the National Road, however, would need to be treated somewhat differently as far as integrity is concerned. Although probably eligible under both A and C, at least one side of the stone arch would need to be exposed since aesthetics were a consideration in the construction of the small stone arches.

A masonry arch or arched culvert could be eligible as a contributing component of a historic district if it fits within the district’s period of significance and retains sufficient integrity to represent that period.



Table 4.2 below is a list of the structural components of masonry structures and a rating of their importance.

**Table 4.2**  
**Structural Component Importance Rating for Masonry Small Structures**

	<i>Structural Element</i>	<i>Rating</i>
superstructure	arch ring	CDE
	barrel	CDE
	spandrel wall	CDE
	parapet	CDE
	fill	T
	roadway	T
	applied ornamentation	T
	plaques, plates and imprints	A
	substructure	abutments
	wingwalls	CDE
	applied ornamentation	T
	plaques, plates and imprints	A
	endpost section of parapet, attached to abutment	S

## 4.4.2 Concrete

### Concrete Slab

<i>Period(s) of Significance</i>	<i>ca. 1900-1911<sup>3</sup>, 1912-1947<sup>4</sup></i>
<i>Potential Applicable National Register Criteria</i>	<i>Criterion C</i>
<i>Integrity Considerations</i>	<i>All CDEs must be intact</i>

Small concrete slab structures are found throughout the state. They were built beginning around 1900 and continue to be constructed, although less frequently, on Maryland's roadways today. Standard Plans issued by the State between 1912 and 1933 included a slab design for small structures.

Small slab structures would generally be individually eligible for the National Register under Criterion C. If an unaltered, pre-1912 concrete slab was found, it could be eligible for its association with the introduction of concrete and concrete technology for roadway structures in the state. From 1912 to 1947, a small unaltered concrete slab structure built according to the Standard Plans could be eligible as an example of the state's efforts to standardize the design of small structures (and bridges). In addition, the reinforced concrete slab, promoted widely as a "permanent structure", was a major technological advancement over the timber and metal beam structures of the nineteenth century. Both a pre-1912 slab and a ca. 1912-47 Standard Plan structure would need to retain all CDEs to be individually eligible for the National Register. To be considered a contributing element of a historic district, a small slab structure would need to fit within the district's period of significance and retain sufficient CDEs to represent that period.

Table 4.3 below is a list of the structural components of concrete slab structures and a rating of their importance.

**Table 4.3**  
**Structural Component Importance Rating for Concrete Slab Small Structures**

	<i>Structural Element</i>	<i>Rating</i>
superstructure	slab	CDE
	parapet or railing	CDE
	roadway	T
	applied ornamentation	T
	plaques, plates, imprints	A
substructure	abutments	CDE
	wingwalls	CDE
	applied ornamentation	S
	plaques, plates and imprints	A
	endpost section of parapet, attached to abutment	S

<sup>3</sup> Structures dating from this period are associated with the era of experimentation with concrete for use in roadway structures.

<sup>4</sup> Structures dating from this period are associated with the efforts of the State to standardize structural design.

## Concrete Box Culvert

<i>Period(s) of Significance</i>	<i>N/A (not applicable)</i>
<i>Potential Applicable National Register Criteria</i>	<i>Not individually eligible</i>
<i>Integrity Considerations</i>	<i>N/A</i>

Concrete box culverts are common and have been constructed throughout the state starting around 1900 and continuing through today. The Standard Plans of 1912 and 1931 included designs for various sizes of box culverts.

Although these structures were included in the state's Standard Plans, they are not considered individually eligible for the National Register. Unlike the standard slab bridge, box culverts in both appearance and basic design have changed very little in the nearly 100-year period during which they were constructed and there are numerous extant examples throughout the state. The concrete box culvert is, with the exception of pipes, the small structure most widely used on Maryland's roadways in the twentieth century. These structures are essentially non-descript, are very hard to date and are not significant from a technological standpoint. For these reasons, the concrete box culvert is not individually eligible for the National Register. If, however, a box culvert in a historic district fits within the district's period of significance, it could be considered a contributing component of the district if it possesses sufficient integrity to represent that period of significance.

Table 4.4 below is a list of the structural components of concrete box culverts and a rating of their importance.

**Table 4.4**  
**Structural Component Importance Rating for Concrete Box Culverts**

<i>Structural Element</i>	<i>Rating</i>
box	CDE
fill	T
headwall	CDE
wingwalls (if present)	CDE
roadway	T
railing	CDE*
plaques, plates and imprints	A

\* Only the Standard Plan no-fill box culvert designs included a rail design but bridge rails would be similar to those on other concrete structures (e.g. slab and girder) built during the same era (i.e. closed parapet or open rail concrete).

## Concrete Girder (Beam)

<i>Period(s) of Significance</i>	<i>1912-1923</i>
<i>Potential Applicable National Register Criteria</i>	<i>Criterion C</i>
<i>Integrity Considerations</i>	<i>All CDEs must be intact</i>

Small concrete girder/beam bridges were not commonly used for construction of small structures. Instead, the type was primarily used for bridges. In the Standard Plans of 1912 and 1919, however, the State did include a girder design for an 18-foot span. There are a limited number of extant small girders on both state and local roadways.

Girder/beam small structures could be eligible for the National Register under Criterion C if they were built according to the Standard Plans of 1912 and 1919. They would exemplify the state's efforts to standardize the design of small structures (and bridges). Concerning integrity, the structures would need to be unaltered, possessing all of their CDEs. In a historic district, a small girder structure could be considered a contributing structure if it fits within the district's period of significance and retains sufficient CDEs to represent the period.

Table 4.5 below is a list of the structural components of concrete girder small structures and a rating of their importance.

**Table 4.5**  
**Structural Component Importance Rating for Concrete Girder Small Structures**

	<i>Structural Element</i>	<i>Rating</i>
superstructure	slab	CDE
	longitudinal beams (on T-beam, slab and beams are integral)	CDE
	concrete parapet or railing	CDE
	roadway	T
	applied ornamentation	T
	plaques, plates, imprints	A
substructure	abutments	CDE
	wingwalls	CDE
	applied ornamentation	S
	plaques, plates and imprints	A
	endpost section of parapet or railing, attached to abutment	S

## Concrete Arches and Arched Culverts

<i>Period(s) of Significance</i>	<i>ca. 1900-1911</i>
<i>Potential Applicable National Register Criteria</i>	<i>Criterion C</i>
<i>Integrity Considerations</i>	<i>All CDEs must be intact</i>

Small concrete arches and arched culverts are not common on the state's roadways. Preliminary research indicates that the arch was rarely used for construction of small structures but some filled spandrel arches were built. Arched culverts were built on the state's roadways beginning around 1900 but the design was soon superseded by the box culvert design. Neither arches or arched culvert designs were included in the Standard Plans.

A small concrete arch or arched culvert would be eligible for the National Register only under Criterion C. A structure dating to the first decade of this century could be eligible for its association with the introduction of concrete and concrete technology for use on Maryland's roadway structures.

To be individually eligible for the National Register, a concrete arch or arched culvert would need to retain all of its CDEs. In a historic district, the structure could be considered a contributing resource if it fits within the district's period of significance and retains sufficient integrity to represent that period.

Table 4.6 below is a list of the structural components of concrete arches and arched culverts and a rating of their importance.

**Table 4.6**  
**Structural Component Importance Rating for**  
**Small Concrete Arches and Arched Culverts**

	<i>Structural Element</i>	<i>Rating</i>
superstructure	arch ring	CDE
	barrel	CDE
	concrete parapet or railing	CDE
	spandrel wall	T
	Fill	T
	applied ornamentation	T
	plaques, plates, imprints	A
	substructure	abutments
	wingwalls (if present)	CDE
	applied ornamentation	S
	plaques, plates and imprints	A
	endpost section of parapet or railing, attached to abutment	S

## Concrete Rigid Frame

<i>Period(s) of Significance</i>	<i>N/A</i>
<i>Potential Applicable National Register Criteria</i>	<i>Not individually eligible</i>
<i>Integrity Considerations</i>	<i>N/A</i>

The earliest datable rigid frame bridge in the state dates to the early 1930s. This type was not included in the Standard Plans and was apparently not commonly used for construction of small structures before World War II. There are few extant examples of the rigid frame small structure on Maryland's state highways.

Although the rigid frame structural type is significant in bridge technology (Condit 1961: 213), it is not significant in the context of small structures. Its significance is primarily linked to post-World War II advances in bridge technology that led to the design of modern highway bridges, particularly those on the Interstate system. Consequently, rigid frame small structures are not considered individually eligible for the National Register. A rigid frame structure located within a historic district could be considered a contributing component of the district if it was built within the district's period of significance and retains sufficient CDEs to represent the period.

Table 4.7 below is a list of the structural components of concrete rigid frame structures and a rating of their importance.

**Table 4.7**  
**Structural Component Importance Rating for**  
**Concrete Rigid Frame Small Structures**

	<i>Structural Element</i>	<i>Rating</i>
superstructure	rigid frame	CDE
	parapet or railing	CDE
	roadway*	T
	applied ornamentation	T
	plaques, plates, imprints	A
substructure	abutments	CDE
	wingwalls	CDE
	applied ornamentation	S
	plaques, plates and imprints	A
	endpost section of parapet or railing, attached to abutment	S

\* There could be substantial fill between top of structure and roadway.

#### 4.4.3 Metal

<i>Period(s) of Significance</i>	<i>1933-1947</i>
<i>Potential Applicable National Register Criteria</i>	<i>Criterion C</i>
<i>Integrity Considerations</i>	<i>All CDEs must be intact</i>

Small metal beam structures have been constructed throughout the state since the second half of the nineteenth century and continue to be built today. A steel beam design was included in the 1933 Standard Plans for use on “secondary roads.” Preliminary research indicates that this type was not widely used for construction of small structures in the twentieth century and there are few extant metal beam structures on the state highway system today. (Although metal arches are included as a type on the SHA’s list of small structure types, there are presently no known examples of this type. Most would post-date 1947.)

The metal beam structure had its roots in the nineteenth century. When concrete technology was applied to roadway structures around 1900, the popularity of the metal beam structure was superseded by concrete structures. The State included a design for a steel beam structure in its 1933 Standard Plans. This design was intended for use on secondary roads only. Small metal beam structures built according to the Standard Plans and with no alterations to the CDEs could be individually eligible for the National Register. They would exemplify the state’s efforts to standardize the design of small structures (and bridges). A metal beam structure that dates within the period of significance of a historic district could be considered a contributing element of the district if it retains sufficient CDEs to represent that period.

Table 4.8 below is a list of the structural components of metal beam small structures and a rating of their importance.

**Table 4.8  
Structural Component Importance Rating for Metal Beam Small Structures**

	<i>Structural Element</i>	<i>Rating</i>
superstructure	deck	S
	longitudinal beams (generally rolled I-beams)	CDE
	floor system	S
	railing	CDE
	applied ornamentation	T
	plaques, plates, imprints	A
substructure	abutments, (wingwalls, if present)	CDE
	applied ornamentation	S
	plaques, plates and imprints	A

#### 4.4.4 Timber

<i>Period(s) of Significance</i>	<i>1933-1947</i>
<i>Potential Applicable National Register Criteria</i>	<i>Criterion C</i>
<i>Integrity Considerations</i>	<i>All CDEs must be intact</i>

Timber beam structures have been constructed throughout Maryland's history. A timber beam design was included in the 1933 Standard Plans for use on "secondary roads." There are a small number of extant timber beam structures on the state highway system and also on the county roadways.

When concrete technology was applied to roadway structures around the turn of the century, the popularity of the timber structure was superseded by concrete structures. The State, however, included a design for a timber structure in its 1933 Standard Plans for use on secondary roads only. Small timber structures built according to the Standard Plans of 1933 could be individually eligible for the National Register. They would exemplify the state's efforts to standardize the design of small structures (and bridges). Concerning integrity, the structures would need to be essentially unaltered, possessing all of their CDEs. Added reinforcement to a Standard Plan structure would, in most cases, damage its integrity and render it not eligible for the National Register. A timber structure that dates within the period of significance of a historic district could be considered a contributing element of the district if it retains sufficient CDEs to represent that period.

Table 4.9 below is a list of the structural components of timber beam small structures and a rating of their importance.

**Table 4.9  
Structural Component Importance Rating for Timber Beam Small Structures**

	<i>Structural Element</i>	<i>Rating</i>
superstructure	deck	T
	longitudinal beams (stringers)	CDE
	railing	CDE
	floor system	T
	applied ornamentation	T
	plaques, plates, imprints	A
substructure	abutments	CDE
	applied ornamentation	S
	plaques, plates and imprints	A
	endpost section of parapet or railing, attached to abutment	S



#### 4.4.5 Pipes and Pipe Arches

<i>Period of Significance</i>	<i>N/A</i>
<i>Potential Applicable National Register Criteria</i>	<i>Neither individually eligible or eligible in a district</i>
<i>Integrity Considerations</i>	<i>N/A</i>

Pipes have been used in various forms in the state since at least the late nineteenth century. Materials have evolved as technology has advanced but the basic design, use and installation technique of pipes have not changed. Pipes are found in use for under-roadway drainage throughout the state and are perhaps the most widely used small structure on the state's roadways.

Pipes and pipe arches are not important as a standardized structural type and have no technological significance. In addition, they do not fit within the significant contexts developed for small structures. Consequently, these structures are not individually eligible for the National Register nor would they be considered contributing components of historic districts because they are ubiquitous and difficult, if not impossible, to date.

Because pipes and pipe arches are neither individually eligible or eligible as part of a historic district, a table of significant structural components is not provided.

#### 4.5 SUMMARY OF NATIONAL REGISTER ELIGIBILITY

Table 4.10 below is a summary of the potential individual National Register eligibility of each small structure type. It is important to note that although a structural type may not be considered individually eligible, it could be considered a contributing element of a district if it has integrity and fits within the district's period of significance. The only exception is pipes, which because they are so common, hard to date and possess no technological significance are neither individually eligible or eligible within a historic district.

**Table 4.10  
Summary of Individual National Register Eligibility of Small Structure Types**

Small Structure Type	Dates of Significance	Applicable NR <sup>1</sup> Criteria <sup>2</sup>	Integrity Assessment for Individual NR Eligibility
Masonry Arch	pre-1800, ca. 1800-50	A, C, D	Most CDEs must be present <sup>3</sup>
Concrete Slab	ca. 1900-1911 1912-1947	C	All CDEs must be present
Concrete Box Culvert	N/A	Not Eligible	N/A
Concrete Girder	1912-1923	C	All CDEs must be present
Concrete Arch/Arched Culvert	ca. 1900-1911	C	All CDEs must be present
Concrete Rigid Frame	N/A	Not Eligible	N/A
Metal Beam	1933-1947	C	All CDEs must be present
Timber Beam	1933-1947	C	All CDEs must be present
Pipes	N/A	Not Eligible	N/A

<sup>1</sup> NR=National Register.

<sup>2</sup> Note that these criteria are applied in the table only to individual eligibility of small structures.

<sup>3</sup> Some alterations may be acceptable. Refer to Pages 4-9.