

## Conclusion

The following summary statements regarding structural characteristics for metal girder bridges, key periods of significance for metal girder bridges in Maryland, and the earliest known documented examples of metal girder bridges in the state are based solely on documentary research.

Metal girder bridges (see Figures 14 and 15 and Plates 10 and 11) are structures in which a floor system and roadway are supported by parallel metal beams or girders, which are carried by concrete, masonry, or metal supports (abutments or piers). The beams or girders are typically rolled sections, which may be plain or encased in concrete. The shape of the cross section of an individual girder may define the girder as an I-beam, or a wide flange beam. Plate girders are characterized as girders built up of riveted sections, rather than a single rolled section. Components of the girder are the flanges (horizontal portions) and the webs (vertical portions).

Girder bridges where the girders are located below the deck or roadway are termed deck girder bridges. Girder bridges in which the girders extend above the roadway level are through girders.

Key periods of significance for the metal girder bridge in Maryland, as indicated by documentary research, include *1846-1870*, when this type of bridge was introduced and popularized by the railroads as an economical and versatile expedient; *1870-1920*, when metal girder (especially plate girder) bridge design and construction was standardized and increasingly employed for highway bridges; and *1920-1965*, when the State Roads Commission utilized metal I-beams and metal plate girders (many concrete encased) heavily in construction for grade crossing elimination structures, as well as ordinary highway bridges.

The earliest known documented example of a metal girder bridge in Maryland was the 1846 plate girder erected by James Milholland on the Baltimore and Susquehanna Railroad, a span credited as the earliest bridge of this type built in the United States. The earliest metal girder bridge known to be extant in Maryland is the U.S. 11 Bridge over the Potomac River (Bridge #21001), built in 1909 by the State Roads Commission. Other significant examples of metal girder bridges constructed in the state include Bridge #3092 on State Route 147 over Long Green Creek (single-span, 1915); the U.S. 40 bridge over AMTRAK near Elkton (four-span, with singularly ornamented Art Moderne detailing); and Bridge #13046, a three-span aluminum girder bridge built in 1963 on State Route 32 near Sykesville by the State Roads Commission and International Aluminum Structures, Inc. (this bridge is the only known aluminum bridge in Maryland).