

Other Significant Stone Arch Bridges

Other known stone arch bridges constructed in Maryland include a variety of structures built for the Chesapeake and Ohio Canal during the nineteenth century, and a singularly significant Roman arch, the Cabin John Aqueduct (Union Bridge), built between 1857 and 1864 by the federal government for the Washington, D.C., water system. In different ways, these structures display the traditional characteristics of stone arch bridge construction, adapted to meet the challenge of a large, engineered public works project.

To carry streams under the canal bed, more than 200 stone arch culverts were built along the right-of-way of the C&O Canal, between 1828 and its 1924 closing. While most such culverts were at right angles to the canal, a minority of such culverts were constructed at a skew angle to the canal bed, which required an innovative rifled construction of the arch rings comprising the barrel of the arch. Built in 1832, Culvert 65, documented as HAER No. MD-32, is an example of the skewed construction of C&O canal culverts. The canal also required larger aqueducts at river and major creek crossings; these, too, were arch structures supporting the canal itself above the river or stream (Sanderlin 1964). In Washington County alone, C&O engineers built five notable aqueducts between 1832 and 1840 (Mish and Cottingham 1977). Two of the most notable were the Conococheague Aqueduct at Williamsport, a three-span arch structure with piers on rounded footings and crowned at the parapet with decorative capitals, and the Licking Creek Aqueduct, featuring only one arch but with a total structure length of over 120 feet. Since the creation of the Chesapeake and Ohio Canal National Park in the 1950s, extant and partially demolished C&O canal culverts and aqueducts have been in the care of the National Park Service. Similar culverts were constructed on the lower-lying Chesapeake and Delaware canal, but these were destroyed during the twentieth century transformation of that canal into a ship canal (Gray 1985).

Another stone arch bridge of national historic engineering significance in Maryland is the Cabin John Aqueduct or Bridge, also known as the Union Arch or Bridge. This remarkable Roman arch was built between 1857 and 1864 under the direction of Army engineer Montgomery C. Meigs, also responsible for the U.S. Capitol dome. After surveys authorized by Congress, Meigs in 1853 recommended a water supply plan for growing Washington which involved moving water from the Potomac River above Great Falls in Maryland. Meigs persuaded officials to fund construction of a massive conduit capable of supplying the city with over four times the water furnished at the time to Paris. To avoid loss of head in the pipe as it crossed the valley of the Cabin John Branch, a Potomac tributary, Meigs designed and built an arch bridge 450 feet long to carry it, with a single flat arch span of 220 feet and a 57.25-foot rise. Running between its solid spandrel walls, the bridge contained a brick conduit 9 feet in diameter. The structure has a bottom arch of radially layered, cut and

dressed granite, and inner rings of radially layered sandstone, the material utilized on the remainder of the bridge. Hidden behind the solid sandstone side walls, the actual, structural spandrel walls of the bridge consist of arches (five on the west end, four on the east), which reduce the dead-load weight of the structure on the haunches (Schodek 1987:112-114).

The Cabin John Bridge or Aqueduct continues to furnish water to the District of Columbia, and also carries MacArthur Boulevard over Cabin John Branch and the twentieth century George Washington Memorial Parkway. The structure also once carried a railway (Trautwine 1872:343). The bridge is a National Historic Landmark and a National Civil Engineering Landmark designated by the American Society of Civil Engineers (Schodek 1987:112-114).