fagleysville road stone masonry arch bridge rehabilitation

Location:	Upper Frederick Township, Montgomery County, District 6-0
Completion Date:	5.01.04
Construction Cost:	$1,000,000
MPMS #:	64358
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Themes:	Leverage and preserve existing investments; Understand the context; plan and design within the context
Project Overview:	This project entailed the rehabilitation of the existing three span stone masonry arch bridge traversing West Swamp Creek on S.R. 4023,Fagleysville Road in Montgomery County. The existing bridge was built in 1854 and is listed on both the 1986 joint PennDOT/PHMC Historic Bridge list and the National Register of Historic Places. The PHMC Historic Resource Survey Form Number S-46 states that the Fagleysville Road Bridge is a good example of a multi-span nineteenth century stone highway bridge. Due to the deteriorated condition of the bridge it has been closed to traffic since 1996. The needs of this project were to reopen the bridge to vehicular traffic, obtain a minimum HS-20 live load capacity, provide the minimum width for a bridge and roadway of this classification and traffic volume, improve the hydraulics, and improve the roadway grades to meet the minimum design speed for this roadway classification. All the needs were to be completed while maintaining and restoring the historic integrity of the bridge, returning it as close as possible to the builder's original intent. The project included public input and considerable agency involvement, including the Pennsylvania Historical and Museum Commission (PHMC), the Pennsylvania Department of Environmental Protection, Army Corp of Engineers, United States Department of the Interior, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, Pennsylvania Natural Diversity Inventory, Upper Frederick Township, New Hanover Township, and various State and Local Representatives. The techniques used to reconstruct the Fagleysville Road Bridge are centuries old, but they have been little used over the last century. Rehabilitating the arches required the construction of timber falsework to create the finished arch dimensions. Stone and mortar were then laid on the forms. Ringstones were place to support the spandrel walls. Key to this process is creating a masonry interlocking between the arch barrel and the ringstones. Masonry spandrel walls were topped with flagstone. The arches were backfilled with an engineered fill to improve drainage and the roadway is reinforced concrete.
Lessons Learned:	Early coordination with the PHMC to discern the historic nature of the bridge, their past experiences with similar rehabilitations and what they require to best make the determination if rehabilitating the structure is a practical alternative. Also, early coordination with the public and elected officials to discern their sentiment toward the bridge as it relates to the quality of life within the community.

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