

Dry Fire Hydrant Designs

**GBW Wall-Mounted Deployable DFH
Phoenix, Maryland
August 2011**



The Problem...



- A fixed-mount, dry fire hydrant located on a large stream that is part of the Gunpowder River Watershed in the Baldwin Area of upper Baltimore County, Maryland, had been damaged by storm debris during a recent bout of flash flooding.
- The lower-half of the piping and strainer had been torn off.

The Problem...



Storm debris from a flash flood destroyed the existing, “fixed-mount” dry fire hydrant that had been in place for many years. The debris tore off the lower part of the suction pipe – including the strainer. GBW Associates, LLC was contracted by the Water Resources Committee of the Baltimore County Volunteer Firemen’s Association about replacing the damaged hydrant with a GBW swivel mount system.

Facts & Figures...



The first step in the replacement project was the removal of the existing components.

Facts & Figures...



Of course, any outdoor job brings its own hazards. This fellow had to be relocated during the demolition process.

Facts & Figures...



The concrete abutment posed a bit of a challenge because of a concrete “shelf” that extended out about 2-feet just under the water level. This shelf required a bit of an adjustment to the standard GBW design.

Facts & Figures...



Because of that concrete shelf, the key measurement in the whole project was getting the location of the new suction strainer “just right.”

Facts & Figures...



The next step – prepare the abutment to accept the swivel mount bracket. The device used a “non-destructive” mounting system – so no drilling or bolting was needed.

Facts & Figures...



The abutment dimensions are important in the design of the mounting bracket, so measurements were double-checked.

Facts & Figures...



Meanwhile, pipe assembly is underway. This project used Schedule 40 PVC pressure pipe and fittings.

Facts & Figures...



Another important fabrication step was installing the retrieval system for the deployable pipe. A simple, stainless steel eye bolt was used in the lower elbow of the pipe. Later, a length of rope will be attached to that eye bolt in order to control the strainer end of the pipe during deployment and retrieval.

Facts & Figures...



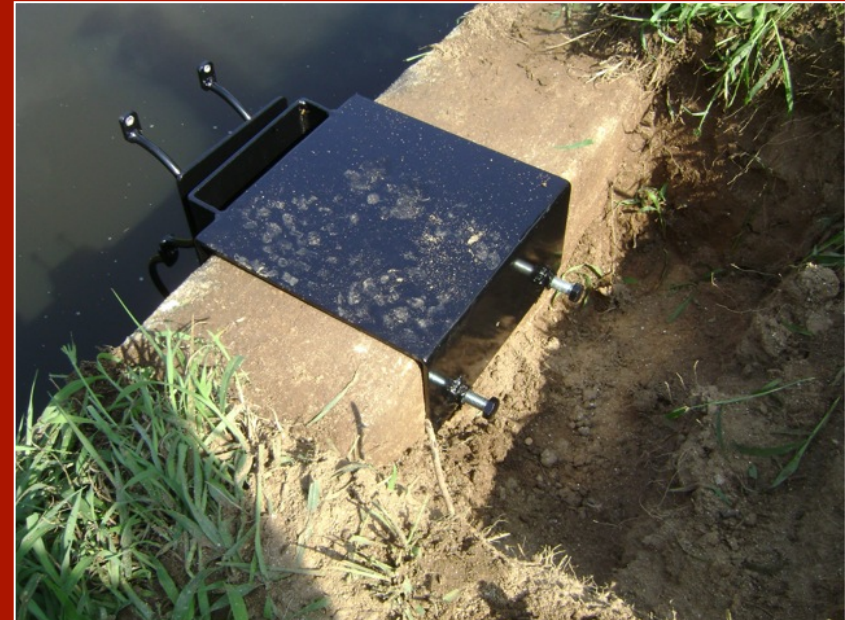
The nut end of the eye bolt protrudes very little into the elbow and thus does not obstruct the flow.

Facts & Figures...



With the glue drying on the pipe, installation of the swivel mount bracket was next up.

Facts & Figures...



Made of ¼-inch, hot rolled steel and powder coated for protection, this heavy-duty bracket insures a rigid mounting system without the need for drilling holes. The two bolts shown are “tension” bolts that are “snugged” up against the concrete abutment to prevent any side to side motion.

Facts & Figures...



Now it is time to determine the correct length of pipe to use. While a bit cumbersome, this measurement method ensures the exact measurement.

Facts & Figures...



The crew “dry fitted” the suction strainer one more time just to double-check that everything was going to work right under water.

Facts & Figures...



Now it was time for the final assembly of pipe – this meant more gluing followed by painting.

Facts & Figures...



A Kochek 6-inch teardrop style strainer was used as the suction strainer on this system. This strainer works well in shallow, moving water – thus a good choice for this project.

Facts & Figures...



Painting is important in order to extend the life of PVC pipe exposed to the sun's ultraviolet rays.

Facts & Figures...



For this project, the exposed PVC pipe and fittings were spray painted green using a special spray paint designed for outdoor plastic materials.

Facts & Figures...



With the paint drying, it was now time to install the cradle/anchor bracket.

Facts & Figures...



With the paint dry and the pipe ready for installation, the next step was to attach the pipe to the swivel bracket.

Facts & Figures...



With the pipe now affixed to the swivel bracket, the system can be rotated and placed into the “stowed” position.

Facts & Figures...



The final assembly. The pipe is stowed out of the water until such time that it is needed. When that time arrives, the pipe is swiveled into position and lowered into the water.

Facts & Figures...



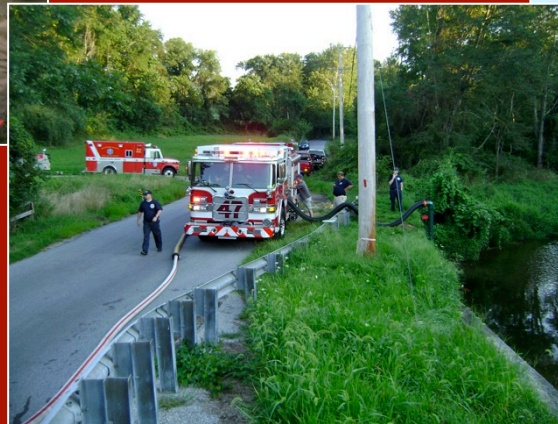
A polypropylene rope is attached to the strainer end (the eye bolt installed earlier) and stored in a mesh bag until needed.

Facts & Figures...



The new DFH system in the stowed position – out of the water.

Facts & Figures...



The final step of installation was a flow test. Jacksonville VFC Engine 473 (1,500 gpm) drafted from the new DFH and attained a flow of 1,012 gpm.



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