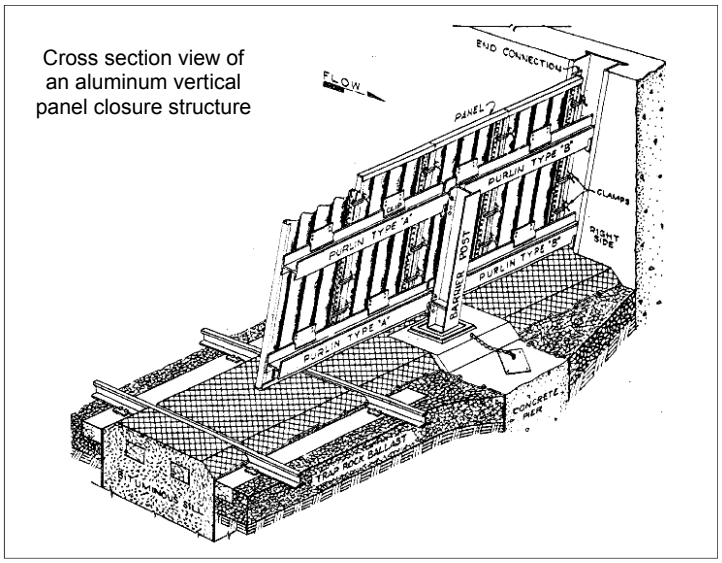

Cross section view of an aluminum vertical panel closure structure

Closure Structures

Closure structures are components that are placed or erected at various openings in the floodwall and levee during a flood event.

Openings were built into levees and floodwall where it was not practicable to ramp railroads or highways over the flood protection system. These openings must be closed during periods of high waters. Aluminum panel or stoplog closures are utilized at larger openings while smaller openings, particularly those requiring less frequent closures, are closed by sandbagging.

There are 6 closure structures of 3 different designs at various locations throughout the system.

Number and specific type are:

1 - Stoplog
3 - Aluminum panel (1 - vertical and 2 - horizontal)
2 - Sandbag

Sunbury Municipal Authority

FLOOD CONTROL

closure structures

SUNBURY MUNICIPAL AUTHORITY
Flood Operations Center
826 Hillside Drive
Sunbury, PA 17801

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Front Panel: An aluminum horizontal panel closure structure, Closure Structure No. 4, installed across the North Shore rail line on the East end of the city. The structure protects the community from high water events on Shamokin Creek.

Wooden stoplog structure, Closure Structure No. 3, installed across East Market Street/Route 61.

Aluminum “vertical” panel structure, Closure Structure No. 1, installed across the Canadian Pacific rail line at the North end of the city.

Closure structure installation is an extremely laborious task, sometimes requiring approximately 50 persons and an extreme amount of “man-hour” time. During the Flood of 96’, it took 19 and 1/2 hours to install closure structures to seal the city from the rising waters of the Susquehanna River and Shamokin Creek. Closure No. 5, a sandbag closure took approximately 40 men 5 and 1/2 hours to install.

Closure Structure Statistics (as of 2006)

Location	Structure No.	Length	Height	No. of panels logs, sandbags
Aluminum Closures				
Street	5	34’ 4”	4’ 4”	2
Railroad	1	39’	7’ 6”	13
Railroad	4	31’ 4”	3’ 6”	2
Stoplog Closures				
Highway	3	45’	7’ 3”	56
Sandbag Closures				
Railroad	7	39’	2’	500
Railroad	6	48’	1’	760

Following the Flood of 96’, the Authority secured federal grant money to modify existing structures, and permanently close those that were no longer needed, thus reducing manpower requirements.

Modifications included; redesigning Closure No. 4 from stoplog to aluminum panel, Closure No. 5 from sandbag to aluminum panel and the elimination of Closure No. 2. The modifications resulted in a significant reduction in both manpower requirements and installation times.

For example, Closure No. 5, can now be installed with 3 men (an equipment operator and two laborers) in less than 12 minutes.

Annual Training Exercises

Each year, in the fall, the Authority coordinates a simultaneous closure structure training exercise at various locations throughout the city.

The exercise is scheduled as a competitive event where Authority crews and volunteer crews from several fire departments compete against each other to beat previous installation times. The event rotates Authority and volunteer crews in an effort to reduce response time during an actual flood event.

Following each exercise, crews meet to discuss ways to improve on their time for the next training event. To date, training records indicate that each year the rotated crews have been successful at beating the prior year’s installation record.

In many cases, installation times have been reduced to just minutes.