



Historic Railroad’s Risk Reduction Measures Pay Off

Full Mitigation Best Practice Story

New Castle County, Delaware



Wilmington, DE – After 1999’s Hurricane Floyd destroyed two trestles and damaged several others, the Wilmington and Western Railroad (W&WRR) decided to upgrade the lost trestles with steel instead of going back to wood. “Dollar for dollar, it made no sense to go back to wood,” says David Ludlow, Executive Director of the 130-year old W&WRR.

Later that same year, On September 15th, catastrophic flooding along Red Clay Creek swept over the rebuilt section nicknamed “Ludlow Bridge.” Although water eventually completely covered the new trestle, it survived and sustained virtually no damage,” said Ludlow.

But six of the railroad’s original wood trestles were destroyed. The W&WRR sustained nearly \$6 million in damages from the mid-September 2003 flash flooding, more than twice the cost resulting from of Hurricane Floyd.

Based on the success of the newer steel design, the lost trestles will be rebuilt to allow a higher floodwater capacity. Because of the increased strength of steel compared to wood, fewer supports, or “bents,” are needed under each trestle to permit more water to pass and fewer debris jams. To retain the historical character of the original wooden trestles, CORTEN steel is used for the substructure and girders, and finished with a protective rust patina.

Besides structural repairs, the W&WRR is strengthening its track embankments along the stream channels, too, to minimize the erosive effects of floodwaters. After Hurricane Floyd, there were several areas where quarry rock was placed for bank protection; those areas resisted scouring during the recent floods. Based on the success of these sites, further bank protection measures are underway.

Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region III**

State: **Delaware**

County: **New Castle County**

City/Community: **Wilmington**

Key Activity/Project Information

Sector: **Public**

Hazard Type: **Flooding; Hurricane/Tropical Storm**

Activity/Project Type: **Retrofitting, Structural**

Activity/Project Start Date: **09/1999**

Activity/Project End Date: **09/2002**

Funding Source: **Environmental/Historical Preservation; Local Sources**

Activity/Project Economic Analysis

Cost: **Amount Not Available**

Activity/Project Disaster Information

Mitigation Resulted From Federal
Disaster? **Yes**

Federal Disaster #: **1297 , 09/21/1999**

Value Tested By Disaster? **Unknown**

Repetitive Loss Property? **Unknown**

Reference URLs

Reference URL 1: <http://www.floodsmart.gov/floodsmart/pages/benefits.jsp>

Reference URL 2: <http://www.state.de.us/dema/default.shtml>

Main Points

- Used a newer steel design for rebuilding the lost trestles to allow a higher floodwater capacity.
- To retain the historical character of the original wooden trestles, CORTEN steel is used for the substructure and girders, and finished with a protective rust patina.
- Besides structural repairs, the W&WRR is strengthening its track embankments along the stream channels, too, to minimize the erosive effects of floodwaters.