



FAST FACTS:

Rigified FRP

PROJECT LOCATION:

Pittsfield, ME

PROJECT NAME:

Neal Bridge

BRIDGE MATERIAL DESIGN OPTION:

Rigified FRP

UNIQUE FEATURE:

This was the first bridge in the world that employed composite filled fiber reinforced polymer (FRP) arches, culminating years of research and laboratory structural testing.

PROJECT DESCRIPTION:

Neal Bridge is located on Routes 11/100 in Pittsfield. Replacement of the nearly century old bridge was a pilot project in cooperation with the MaineDOT and the University of Maine AEWCA Advanced Structures and Composites Center.

PURPOSE AND NEED:	The old bridge was constructed in 1917 with a widening in 1932. The single-span structure consisted of concrete Tee beams (1917), and cast-in-place deck on each side (1932), with gravel fill and bituminous paving plus guard rail. The abutments are mass concrete. The bridge is structurally deficient and was scheduled for replacement.	
CONTRACT AMOUNT:	N/A	
ENGINEER'S ESTIMATE:	\$620,000	
BID AMOUNT:	N/A: The FRP tubes and decking were provided to the contractor by MaineDOT	
FINAL CONTRACT VALUE:	\$558,000 includes FRP tubes and decking provided by MaineDOT	
TRADITIONAL APPROACH:	Replace the existing structure with a 17' span x 10.17' rise pipe/arch structure. Or replace it with a 16' span x 8.33' rise plate arch structure with 4'x 2' footings.	
NEW APPROACH:	Bridge in a Backpack with FRP arches, decking and headwall.	
BRIDGE DETAILS:	Span:	28'-10"
	Rise:	7'-6"
	Width:	45'
	Skew:	5 degrees
	Arch:	23 carbon fiber tubes, 12" in diam., spaced @ 2'
	Headwall:	Composite sheet pile, with geo-grid mechanically stabilized earth
BENEFITS REALIZED/EXPECTED:	This was the first Bridge in a Backpack constructed. It served as a demonstration project for the construction. Additionally, this bridge has been live load tested, monitored and evaluated for design performance.	
DURATION OF ACTIVITY:	July to September 2010	
OWNER:	MaineDOT	
TEAM/AFFILIATIONS:	MaineDOT; University of Maine AEWCA Advanced Structures and Composites Center; Advanced Infrastructure Technologies; FHWA, Maine Division; Stetson & Watson	
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