



BMDO

Bridge Material Design Options

FAST FACTS:

Rigified FRP

PROJECT LOCATION:

Auburn, ME

PROJECT NAME:

Royal River Bridge

BRIDGE MATERIAL DESIGN OPTION:

Rigified FRP

UNIQUE FEATURE:

Project was selected as a National 2011 Engineering Excellence Grand Award winner by the American Council of Engineering Companies.

PROJECT DESCRIPTION:

The Royal River Bridge spans the Royal River in Auburn and is located on the Old Danville Road, a local road. The new bridge is a 38' span composite arch on concrete footings and piles. The width was increased to 28'. T-walls were used to minimize stream impacts.

PURPOSE AND NEED: The stream was constricted at the previous bridge and erodible soils were evident downstream. The bridge had a sufficiency rating of 59.4 and consisted of a 24' span with steel girders on concrete abutments and granite and gabion wingwalls. Width, alignment, and sight distances were deficient.

CONTRACT AMOUNT: N/A

ENGINEER'S ESTIMATE: \$793,854

BID AMOUNT: \$764,164

FINAL CONTRACT VALUE: \$793,854

TRADITIONAL APPROACH: Use precast voided slab superstructure

NEW APPROACH: Bridge in a Backpack

BRIDGE DETAILS:

Span:	38'
Rise:	9' 6"
Width:	38'
Skew:	15 degrees
Arch:	13 carbon fiber tubes, 12" in diam., spaced @ 3' 1"
Headwall:	cast-in-place concrete footing and precast modular gravity wall

TOP INNOVATIONS EMPLOYED: Bridge in a Backpack; a stepped cast-in-place concrete footing placed for the headwall

BENEFITS REALIZED/EXPECTED: Long lasting, maintenance free, buried structure.

DURATION OF ACTIVITY: June 2010 to November 2010

OWNER: MaineDOT

TEAM/AFFILIATIONS: MaineDOT; Advanced Infrastructure Technologies; University of Maine AEWCA Advanced Structures and Composites Center; Kleinfelder • SEA; Wyman & Simpson

CONTACTS:

Dale Peabody Research Engineer MaineDOT 207-624-3305 dale.peabody@maine.gov	Brit Svoboda President/CEO, Advanced Infrastructure Technologies 20 Godfrey Drive Orono, ME 04473 207-866-6526 www.aitbridges.com
Nate Benoit Project Manager Urban & Federal Bridge Program MaineDOT 207- 215-1590 nathaniel.benoit@maine.gov	Jonathan Kenerson Structural Bridge Engineer Advanced Infrastructure Technologies 207-866-6526 jon@aitbridges.com

