



PROJECT DESCRIPTION

H-40 in Chippewa County is a major east-west artery in the central/eastern Upper Peninsula of Michigan utilized by residents, farmers, loggers, tourists and recreationalists. In 2010 the U.S. Forest Service funded the replacement of a stream crossing on H-40 over Bear Creek in conjunction with the Forest Service's Aquatic Organisms Passages (AOP) program. The AOP removes aquatic barriers and improves stream quality at road crossings. However, culvert installations in the eastern U. P. are fraught with well known significant natural obstacles... soils which tend to be very corrosive on metal conduits, and soils having very poor bearing capacities.

A precast concrete box culvert was selected as the material of choice to provide a service life at least equal to the design life of the crossing (see Least Cost Analysis – LCA). Precast concrete box culverts have proven themselves to be virtually immune to the corrosive issues found in the eastern U. P., thus providing a service life exceeding 75 years (and still counting in many instances)!

To address the poor soils issue and also counter concerns relative to settling of the box culverts for this project, the Engineer, Northwest Design Group, inc. specified improved culvert bedding in their design. Additionally, heavy duty joint ties were used connecting the box culvert sections together providing a bigger "footprint" to resist differential settlement.

Two years later, there has been absolutely no settling of the box culverts, and there is no significant settling expected in the future. Mission accomplished... an AOP friendly structure that proves to be superior both structurally and economically!

PROJECT TEAM MEMBERS

Owner(s): U.S. Forest Service, Hiawatha National Forest, Chippewa County Road commission
Engineer: Northwest Design Group
Contractor: Alfredson Brothers Construction
Supplier: Upper Peninsula Concrete Pipe Co., Inc.

TECHNICAL DESCRIPTION

Geometry: 14' span x 7' rise x 100' length
Installation: Summer of 2010 (part width construction)