

HR-313 Air Formed Arch Culvert Construction Washington County

Key Words: Air-Form Method, Inflated Balloon, Shotcrete, Bridge Replacement, Culverts

ABSTRACT

Iowa's secondary roads contain nearly 15,000 bridges which are less than 40 ft (12.2 m) in length. Many of these bridges were built several decades ago and need to be replaced. Box culvert construction has proven to be an adequate bridge replacement technique. Recently a new bridge replacement alternative, called the Air-Form method, has emerged which has several potential advantages over box culvert construction. This new technique uses inflated balloons as the interior form in the construction of an arch culvert. Concrete was then shotcreted onto the balloon form.

The objective of research project HR-313 was to construct an air formed arch culvert to determine the applicability of the Air-Form technique as a county bridge replacement alternative.

The project had the following results:

The Air-Form method can be used to construct a structurally sound arch culvert.

The method must become more economical if it is to compete with box culverts.

Continued monitoring should be conducted in order to evaluate the long-term performance of the Air-Form method.