



Kansas LTAP Fact Sheet

A Service of The University of Kansas Transportation Center for Road & Bridge Agencies

Low Water Crossings — Build Them Right

By Lisa Harris

A low water stream crossing (LWSC) can be a low cost and viable alternative to a culvert or bridge, in some cases. LWSCs are particularly suitable for low volume roads across streams where the normal volume of flow is relatively low. However, when water is present in the crossing, safety is an issue. These guides that may be helpful to you in designing and signing your low water crossings.

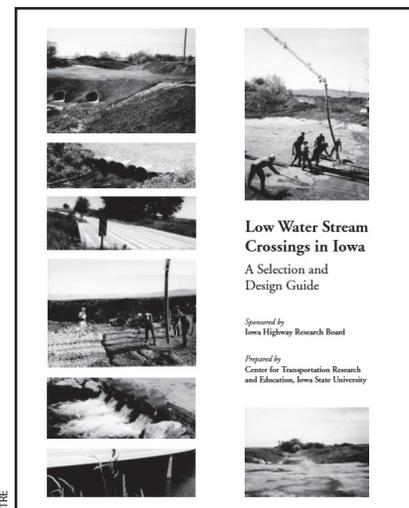
Low Water Stream Crossings in Iowa: A Selection and Design Guide.

This guidebook, pictured at right, provides well illustrated and detailed guidance on placing and designing low water stream crossings. As in Kansas, most Iowa counties maintain low volume roads with at least one bridge or culvert that is structurally deficient or obsolete, and oftentimes many such structures. Replacement with structures of similar size would require large capital expenditures that many counties cannot afford. Low water stream crossings (LWSCs) may be an acceptable low-cost alternative in some cases.

The most common types of LWSCs are unvented fords, vented fords, and low water bridges. LWSC sites, types, and designs need to be carefully selected because low water stream crossings will be flooded periodically, requiring the road to be temporarily closed to traffic.

covers site evaluation, selection of the type of LWSC, design and construction, inspection and maintenance, and traffic control measures.

Bob Sperry of Iowa LTAP gave a presentation at the MINK local roads conference in September 2013 on this topic, highlighting information from this design guide. Download at <http://www.ctre.iastate.edu/pubs/lwscguide.pdf>.



Signing Strategies for Low-Water and Flood-Prone Highway Crossings

It takes as little as 2 ft of water to float most cars. In Texas, approximately eight flood-related fatalities occur each year—and most of these involve motorists trapped in their vehicles or washed away. In many cases, victims, not wanting to take a lengthy detour, ignored barricades and tried to drive across a flooded street or low-water crossing—literally driving themselves into harm's way.

Several districts in Texas have developed different signing strategies for warning motorists of low-water crossings. As part of this research, the Texas Transportation Institute (TTI) developed guidelines and recommendations for creating signing uniformity for low-water and flood-prone sections of roadways.

This report describes research conducted at TTI on driver comprehension of various types of signs and warnings at low water crossings. The researchers developed guidelines for the following situations: 1) roadway sections that have several low-water crossings where water flows over the roadway in wet conditions, 2) actual low-water crossings, and 3) temporary road closures due to high water. TTI also developed criteria for when to implement active water level detection and advance warning systems at low-water crossings and flood-prone roadway sections.

Download this report at <http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/0-6262-1.pdf>.



One of the 16 recommendations from the Texas report:

Use “Do Not Cross When Flooded” as an optional sign at crossing.

For crossings where only static signs are to be provided, the research team recommends using the DO NOT CROSS WHEN FLOODED static sign located at the crossing. This sign provides an unambiguous message to drivers. The research team recommends placing this sign 25 ft (minimum) to 50 ft (desirable) from the location of maximum water height in the crossing. This would allow drivers ample space to turn around before entering the crossing.

Manual on Uniform Traffic Control Devices (MUTCD)

The MUTCD addresses the signing of flooded areas in a very brief section: Section 2C.35 (01 and 02). It includes guidance for using a ROAD MAY FLOOD sign and a standard to follow if a depth gauge is used. Be sure to consult the MUTCD when signing a low water stream crossing. It is the national standard for traffic control devices.

View Section 2C.35 at <http://mutcd.fhwa.dot.gov/htm/2009/part2/part2c.htm#section2C35>. ■

Reprinted from the Fall 2013 issue of the *Kansas LTAP Newsletter*, a publication of the Kansas Local Technical Assistance Program (LTAP) at the Kansas University