



Aging Culverts – Problems & Repairs

Excerpt from a PowerPoint presentation by Denis Stuhff, P.E.
& Michael Fazio, P.E., Utah Department Of Transportation Central Hydraulics

Every local government has at least one culvert to deal with. In fact, there are some 47,000 culverts on the Utah State system alone! The replacement cost for these culverts runs to more than \$300 million!

The traditional maintenance program for culverts has always been "as-needed." But that just isn't good enough when so much is riding on culverts being in good working order! So, what are local governments to do?

The accepted guidelines for culvert inspection can be found in the FHWA Culvert Inspection Manual (FHWA IP-86-2). Additional help can also be found in NCHRP Synthesis 303 (Assessment & Rehabilitation of Existing Culverts). These resources are available from FHWA and NCHRP directly.

The first step is inspection. There are three levels of inspection for assessing culvert conditions:

1. Non entry, visual, qualitative
2. Entry; corrosion, joints, deformations–maintenance needs
3. Structural/hydraulic calcs–maintenance or replacement

It is critical to make a correct problem identification and assessment (fully described in the FHWA Culvert Inspection Manual):

1. Identify the problem
2. Detect the symptom
3. Determine the underlying cause
4. Select appropriate treatment

Modes of Culvert Aging Failures

- Corrosion
- Structural
- Material Oxidation
- Joint Leakage
- End Sections
- Blockages
- Scour

By knowing the cause, alternative solutions can be found. Once the culverts are inspected and any problems identified, you are faced with making a choice of preventive maintenance strategies, repair or replace. The key is to take the most appropriate action to slow aging. This can include any and all of the following:

- Eliminate standing water
- Cleaning debris from barrels
- Sealing/Painting
- Joint repair
- End treatments, etc.

Being aware of the problems caused by aging culverts can keep that problem from getting worse and requiring costly replacement.

Reference: Utah LTAP Center, On the Move, Vol. 19, No. 2, Spring (April) 2006