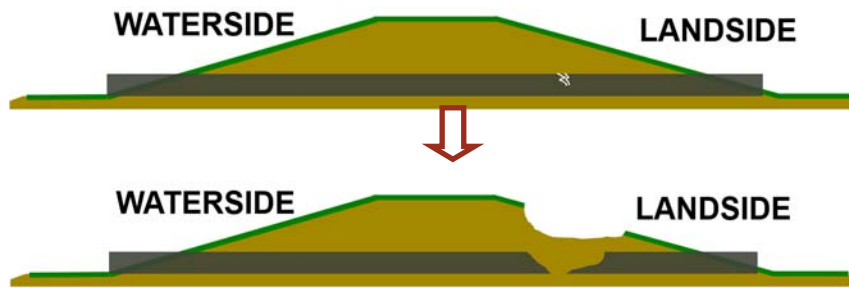

PIPE INSPECTIONS

WHY ARE THEY IMPORTANT?

THE USACE LEVEE SAFETY PROGRAM PERFORMS INSPECTIONS IN ORDER TO ASSESS AND COMMUNICATE THE RISK ASSOCIATED WITH THE NATION'S LEVEES. THESE INSPECTIONS REQUIRE LEVEE SPONSORS PERFORM VIDEO OR VISUAL INSPECTIONS OF PIPES PASSING THROUGH OR UNDER THE LEVEE SYSTEM.

OLD OR DAMAGED PIPES CAN INCREASE THE RISK OF A LEVEE SYSTEM. A FAILED PIPE CAN RAPIDLY ERODE EMBANKMENTS OR FOUNDATIONS, LEADING TO LEVEE FAILURE.

PIPE CRACK AND FAILURE



RECENT PIPE FAILURES IN THE ST. LOUIS REGION



2013 MISSISSIPPI RIVER FLOOD



2017 MISSISSIPPI RIVER FLOOD

The risk of pipe failure increases with age and is impacted by pipe material type and the quality of construction methods during installation.



Pipe Life Expectancy*	
Corrugated Metal Pipes (CMP)	10-35 years
Steel Pipes	40-70 years
High-density Polyethylene (HDPE) Sliplined Pipes	50-100 years
Concrete Pipes	70-100 years



Deficiencies like corrosion (above left) and joint separation (above right) are commonly found in pipes operating past their life expectancy.

*Ref. <https://www.nap.edu/catalog/22140/service-life-of-culverts>

USACE RECOMMENDS PIPE INSPECTIONS BE IN ACCORDANCE WITH NASSCO PACP (NATIONAL ASSOCIATION OF SEWER AND SERVICE COMPANIES' PIPELINE ASSESSMENT CERTIFICATION PROGRAM) STANDARDS TO ENSURE PIPE CONDITIONS ARE ADEQUATELY DOCUMENTED.

USING AN INSPECTOR WITH A NASSCO CERTIFICATION WILL SATISFY USACE PIPE INSPECTION REQUIREMENTS.

NAASCO PACP CCTV Standards *	
A NASSCO certified inspector must be on-site	Camera should be positioned at the center of a circular pipe
Pipe should be free of all debris/obstructions	Camera should move at a steady pace and not exceed 25 feet per min
If pipe cannot be completed due to obstructions, inspect from opposite end	The camera should stop when the inspector views defects or features (including at each joint).
All reasonable efforts should be made to fully inspect the pipe.	A written/printed PACP Inspection form must be completed.

*This is an abbreviated list of standards, for more information, refer to the *USACE Guidance for CCTV and Sonar Inspection Pipes Penetrating Levees*.

UNDERSTANDING THE CONDITION OF PIPES THAT PASS THROUGH LEVEE SYSTEMS ALLOWS LEVEE OWNERS TO MAKE RISK-INFORMED DECISIONS!

Pipe inspections are complete, now what?

Some actions to consider:

- **Prioritize levee maintenance activities to account for current or future pipe maintenance.**
- **If pipe conditions warrant action, budget for pipe repairs, replacement or slip lining with HDPE.**
- **Develop a schedule for recurring inspections to monitor conditions.**



Did you know?

Slip lining is one of the oldest methods for trenchless rehabilitation of existing pipelines. Slip lining is used to repair leaks or restore structural stability to an existing pipeline. Industry claims a 50% cost savings vs. full pipe replacement.

