
TWI Report #3 - The Fake News about Exploding Watermains

By: Steve Willie

FICTION: Que up the exploding watermains! Infrastructure is failing from old age. Nobody is to blame. It is just too old. Give us more money to fix it and we promise not to waste it this time.

FACT: Our infrastructure is actually failing from day-one defects and subsequent damage. The people who got paid to manage our infrastructure have wasted the ratepayers' money. Until public officials can correctly attribute infrastructure failures to day-one defects and subsequent damage, there will be no changes in behavior. The same problems will continue forever, and the ratepayers will need to pay higher taxes, more user fees, and costly utility rates to fix the problems.

FAKE INFRASTRUCTURE NEWS

The story usually goes like this:

1. Look at these pictures of exploding pipes!
2. Our infrastructure is too old... give us more money.

Most of these fake news stories about infrastructure say nothing about day-one defects and subsequent damage, which together are responsible for more infrastructure defects than old age.

If you are a public works official and you hear or read a story about the infrastructure you manage, then you should say something. If you know the truth but fail to offer the truth about this important issue, then you may have compromised your credibility.

LARGE PIPES EXPLODING IN MARYLAND – THE FAKE NEWS

The Washington Suburban Sanitary Commission (WSSC) operates a very large water system in the State of Maryland, USA. The water system contains a type of pipe called Prestressed Concrete Cylinder Pipe (PCCP) which is normally a perfectly good type of pipe providing at least 75 years of reliable service.

Technologies from the 1950's could easily produce PCCP pipes to serve beyond 75 years, but somebody decided to try an experiment to save some money. It turns out that a combination of manufacturing defects, installation errors, and operational issues has resulted in a large number of failures even before the pipes reached 40 years old. Very few of these failures were caused by the age of the pipe. Even if the failures were related to the age of the pipe, the pipes are still less than 40 years old. In the world of buried public infrastructure, a life span of only 40 years is an economic disaster. Claiming that a 40-year-old pipe is too old is simply false.

Politicians and public works officials will rarely discuss the official results of the failure investigations. By the time the official report is released, their previous statements have been mostly forgotten. However, this information can sometimes be found online. The investigations prove that almost every PCCP failure so far was the direct result of one or more of the following:

- Using the wrong type of prestressing steel (this was cheaper than using the correct type of steel).
- Failing to apply tension to the pre-stressing steel during the manufacturing process (therefore it was not actually pre-stressed).



- Failing to provide for adequate corrosion protection for the steel.
- Failing to use the correct pipe installation methods. This can damage the joint seals and pipe coating which increases the rate of corrosion.
- Sending pressure surges through the pipe from operational or maintenance issues (such as defective air valves or power failures).

So which of these causes is aging infrastructure?

The news media is full of articles about aging infrastructure. Some of these articles use the failures of PCCP at WSSC as examples of aging infrastructure. These articles usually start out with a photo of a street in Maryland blown apart by ruptured PCCP. Apparently WSSC has not issued corrections to the media. In fact, WSSC's own website includes the following reasons for these failures (as of January 16, 2019):

- *"... we are faced with aging (deteriorating) pipes and valves."*
- *"The older pipeshave reached their natural life span."*
- *"The issue of aging infrastructure, and how to pay for infrastructure renewal, goes beyond WSSC. It is a national issue."*

WSSC also blames some of the failures on cold weather (they cannot predict that the weather gets cold in Maryland). You may have noticed that there is something missing from the WSSC website. Perhaps it should mention the following:

- WSSC used rate-payers money to purchase pipe which contained unproven or defective Type IV prestressing wires which were subject to accelerated corrosion, causing pipe failures much sooner than the pipe's intended service life.

- WSSC has experienced numerous pipe failures due to issues related to design, manufacturing, installation, inspection, operation, and maintenance. The most proximate cause of these pipe failures was not the age of the pipe.
- The pipe defects will cost many millions of dollars to fix. WSSC settled with the company which made some of the defective pipe, but the settlement will not come close to paying for the damages.
- All WSSC personnel who contributed to these failures got to keep their jobs and most were promoted. Many of them retired with nice pensions.

Be sure check periodically to see if WSSC edits their website to include the truth.

A.S.C.E. MAGAZINE – THE FAKE NEWS

Another example of fake infrastructure news is a professional publication called A.S.C.E. Magazine, published by the American Society of Civil Engineers. A.S.C.E. Magazine has contained numerous articles about aging infrastructure over the years. A representative editorial is from the April 2013 issue on page 45, where it shows a large photograph of an impressive river in the street from a 54-inch PCCP pipe failure in Capitol Heights, Maryland in 2011. The article blames pipe failures on the following three causes: aging infrastructure, wear, and the Federal Government. In baseball that would be: three strikes, you're out.

Why is the Federal Government responsible for pipe manufacturing defects? Specifically what type of "wear" contributed to the pipe failure? It turns out that this pipe was only 40 years old. Many of the PCCP failures actually happened at only 30-35 years. We should expect better

accuracy from a professional publication like A.S.C.E. Magazine.

PCCP pipe is specifically designed for a long service life, and it certainly has the potential to provide it. In fact, a properly designed, manufactured, and installed PCCP pipe should have lasted a minimum of 75 years. The available materials and the level of technology in the 1950's, 60's, and 70's were easily capable of this level of performance. So what happened? What happened was not related to the age of the pipe. We should not claim that the pipe failed due to age when it actually failed from a day-one defect or subsequent damage.

Do your own research. A quick online search will uncover many news articles about aging infrastructure which are illustrated with photos of flooding from broken PCCP pipes. Look for photos with large concrete pipes which have dozens of broken rusty wires sticking out of them. Fact: almost none of those major pipe failures were caused by the age of the pipe.

CRACKED SEWER PIPES – THE FAKE CITY COUNCIL MINUTES

A few years ago I reviewed in-pipe inspection video for 1500 feet of 12-inch clay sewer pipe in a city in western Washington State. The pipe was installed in the 1920's and was in perfect condition except for individual cracked sections of pipe. After seeing mostly perfect pipe in between cracked sections, I noticed that the cracked sections were spaced at 260-270 feet apart, the same distance as the intersections. That certainly captured my interest. I went out there to take a look and discovered that the locations of the sewer pipe cracks corresponded exactly with old trench patches from the watermain crossings (hint: look for the two parallel hairline pavement cracks crossing the

broken utility which might still be visible even after the street has been repaved). Subsequent water pipe construction had crushed the sewer pipe at many of the pipe crossings.

The City Council then passed a resolution to authorize sewer pipe replacements and repairs at various locations within the 1500 FT. The Councilmembers cited aging infrastructure as the reason. I made no attempt to correct the City Council. My daughter had college payments coming up and I preferred not to get fired for contradicting politicians. I was only a consultant and not a City employee with guaranteed employment. My daughter has since graduated from college. Now I can tell the truth... and I will.

The next time this City replaces a watermain, they will probably crush more sewer pipes and blame it on aging infrastructure again. In this particular city, the example above is only the tip of the iceberg. These are not isolated incidents, and I will be relating numerous examples in subsequent reports. Message to City Council and Staff: You are misleading your citizens about the infrastructure they own. The citizens elected or paid you to manage it and you can do better.



ABOUT THE AUTHOR

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