

How Tight Are Your Storage Tank Anchor Bolts?

Kansas Rural Water Association participated in a unique situation in April or at least it was unique for me. I went to visit with John Provorse and Jim Madigan from Butler Rural Water District No. 4 about an issue with the districts' standpipes. Butler Rural Water 4 serves customers south and east of El Dorado. The system has 150 miles of pipeline, 730 meters, and three standpipes. The district purchases approximately 40 million gallons of water a year from the city of El Dorado and Butler Rural Water 2. Originally, they bought water from the city of Augusta. The district's meters are all read by radio read meters. The Cody Hill stand pipe and the Kechi stand pipe were both built in the mid 1970's and the Chappel stand pipe was built in the early 1980's. They have had routine maintenance done about every 15 years since then. The Kechi stand pipe had 20 feet added to provide higher pressure.

The reason for the call to KRWA was because there was some Internet equipment being installed on the storage tanks. Direct line-of-sight alignment is required for the equipment to function properly. When the technician would try to align the equipment, nothing would line up. With some investigation, he found the problem was the tower was rocking (swaying) so badly he couldn't get the alignment he needed. He made a call to the water district.

Upon investigation, RWD 4 staff noted that the taps on some of the anchor bolts were loose. In fact, there was enough space that three quarters could be stacked and then slid between the washer and the flange used for bolting down the stand pipe. At this point the district had two viable options: 1) tighten the taps, or; 2) drive shims between the concrete base and the washers.

The district had purchased some heavy-duty box-end wrenches with an anvil type end, to allow hitting on them with a sledge hammer. John, Jim and I worked a good part of the day swinging a sledge hammer, giving the wrench hits until the tap was tight. We then moved diagonally to the opposite side of the storage tank to tighten that anchor. Then we returned to the original side and proceeded in that manner around the tank. Some of the taps on the anchor bolts could not be budged. These had to be heated until we could get them to move.

I would be interested to know if this problem has been experienced by any other water system. Have you checked the anchor bolts to see if the taps have loosened? Does your storage tank maintenance contractor check the anchors? I can only imagine what problems could be created were anchor bolts allowed to be loose too long. Standpipes and elevated water storage tanks are very expensive components



This photo shows anchor bolts on a water standpipe in Butler RWD 4. Taps had loosened several rounds of threading.

of a water system's infrastructure. The thing that may seem trivial to protect the investment is as good as money in the bank.

In summary, I suggest that water systems develop a plan to have contractors that install equipment on or around your facilities to install them so you have access to your site. On this project, one of the equipment panels and the connecting wires had to be moved so the district could gain access to some of the nuts. A little planning ahead of time will make a much cleaner work site and less work for the contractor.

I've appreciated meeting many system operators and managers since beginning with KRWA earlier this year. Let me know how KRWA can be of help. Email to me at bret@krwa.net or give me a call at 785.258.0642.

Bret Beye joined the KRWA staff in March 2017. He previously worked for 30 years at the city of Herington where he was Water Distribution and Sewer Collection Foreman. A Class III water operator and certified as a backflow device technician, Bret also served on the USD 487 Board of Education from 2003 to April 2017 where he was board president and vice-president.



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