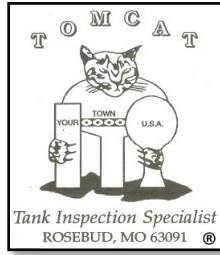


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April 29, 2020

**Knob Noster State Park
873 SE 10
Knob Noster, MO 65336
Contacts: Melissa Hall / Darren**

**Ph: 660-563-2463
County: Johnson
Tank: Shawnee OGC Standpipe
Inspection Date: March 26, 2020**

INSPECTION REPORT

SPECS:

This tank was built by Gerard Tank Company in 2001, contract #X9607-01.
This is a standpipe water storage tank.
The tank was drained by running out the water through the system. The tank is completely drained and the system is shut down and winterized every fall.
System pressure was not maintained, as the campground was still shut down and winterized.
This is a chlorinated system.
The container height is 41 ft. and the tank diameter is 10 ft.
High water level is 40 ft.
Tank capacity is 23,500 gallons.
The tank is located on a ridge up above the campground, with limited working room around the tank. Access is through the campground, then a narrow gravel drive up to the tank. The old, riveted tank sits only about 20 ft. to the south, there are power lines about 30 ft to the East, a cabin through the woods about 60 yards East, and the well building is about 40 ft to the Northwest.
There is electric and water at the site. When the system is shut down, water is available when the well is turned on.

TANK EXTERIOR & CONDITIONS:

The tank is not lettered.
There were no indications of leaks in the tank when it was full.
The tank has no water level indicator.
There are no nuts or bolts missing on the water tower.
There are six 1-3/8" anchor bolts, in good condition.
None of the anchor bolts need tightening.
The anchor chairs are clean and in good condition.
The concrete foundation is above grade.
The foundation shows no signs of settling, and it is in good condition.
The tank base is in good condition.
The tank ladder is serviceable and in good condition.
The tank ladder is mostly AWWA and OSHA compliant. OSHA requires non-skid rungs. Your rungs are smooth. In our opinion, your ladder is just fine.
Side rails: 3/8" x 2" flat bar
Rungs: 3/4" dia. rod, not non-skid
Rung Center Distance: 12"
Rung Width: 16"
Toe Clearance: 8"

The tank ladder has a notched rail safety climb in good condition.

The tank ladder has a locked vertical cover climb prevention device.

The bottom rung of the tank ladder is 16 ft above grade. Good.

The roof vent condition is good, but it is a poor design.

The roof vent is a palletted design, with two layers of fine-mesh metal screened pallets and an additional layer of expanded metal bird screen. The condition of the vent is good, but, as with nearly all palletted designs, the fitment of the pallets to the stack and to the vent frame is not insect-tight. As well, the outer cover is much too short, allowing blowing cross winds to blow right through the vent.

Furthermore, the lowest point of air intake is 16-1/2". MO DNR wants 24" to LPAI of a vent. The vent ought to be replaced with one that is truly insect-tight and frost-proof, and it needs to be tall enough.

The overflow is in good condition.

The 6" overflow comes down to 23-1/4" above grade and has a flapgate backed by a screen. It turns out away from the tank, has a nice concrete splash-pad. The mesh size of the screen is about 1/8", which is a little on the small size. It ought to be changed out for 1/4" mesh.

The roof access hatch is round, 24 in. nominal diameter, with a hinged, lockable lid. It has 6" of frame raise and the lid has 2" of downturned lip. It is in good condition, but the lid could fit tighter to the top of the neck. Relocating the lock tab would improve the fit. As well, the neck is out of round. It is approx. 24-1/2" OD from lock tab to hinge, and about 25" OD everywhere else.

The tank has no roof ladder.

The tank has no railing.

The condition of paint on the Lower Tank Exterior is Good. The park power-washes it every year or so.

The condition of paint on the Center Tank Exterior is Good-to-Fair. It looks quite good, but there is a good bit of oxidation from weathering.

The condition of paint on the Upper Tank Exterior is Good-to-Fair. It looks quite good, but there is a good bit of oxidation from weathering.

The condition of exterior paint on the roof is Fair-to-Poor. Appearance is pretty good, but there are several areas of rust, totaling about 1 square foot.

The general condition of the tank exterior paint is Good-to-Fair. It should support an overcoat, and now would be the time to do one.

The condition of steel on the Lower, Center, and Upper parts of the tank is Good.

The condition of the roof steel is Good.

The general condition of the tank exterior steel is Good.

TANK INTERIOR & CONDITIONS:

The interior coating is epoxy.

There is no rigging rail.

There is no interior tank ladder.

The overflow intake is a weir box at 40' height.

The bottom manway is round, 24 in. diameter, external bolt-flange type, hinged, serviceable and in Good condition.

The 6" fill pipe is in fair condition, and it is extended 5' above the floor. It should be extended another 25 ft.

This is a double-piped tank, and the 6" withdraw pipe extends about 5-1/2" above the floor. It has a removable silt stop that would about double the height, but it fits so tightly that it won't seat onto the pipe. There is no cover. The silt stop should either be fixed or discarded, but in either case we recommend a removable cover for the withdraw pipe.

The interior roof coating is in Good condition.

The Upper Tank coating is in Fair condition.

The Center Tank coating is in Poor condition.

The Lower Tank coating is in Fair condition.

The roof steel is in Good condition.

The Upper, Center, and Lower tank wall steel is in Good condition.

The interior base plate steel is in Good condition.

The general condition of the interior steel is Good.

The general condition of the interior coating is Fair-to-Poor. Replacement should be planned in the next 5 to 7 years.

The tank has no cathodic protection system.

There are no unprotected openings in the tank roof.

ITEMS DIRECTLY RELATED TO SANITATION

The vent is in good condition, but it is a poor design. The outer cover does not come down far enough, at all, to prevent crosswinds from blowing straight through the vent. As well, the fitment of the screens, though good for a vent of this design, is not insect tight, and the vent needs to be higher above the roof to comply with MO DNR Design Guide standards. Replacing the vent would be a worthwhile upgrade, in our opinion.

The roof hatch is in good condition, but the lid does not fit tight to the neck very well. There was a good ½" gap on the lock-tab side. We installed an adhesive-backed compressible gasket, and it took several layers of material to achieve a seal. Rework of the hatch-lid-to-neck fit should be done as part of future coatings work.

The overflow is to grade and has a screen-backed flapgate. Good.

See the end of the Picture Report for further comments.

J.W. Zelch

J.W. Zelch, Inspector

NACE Certified Coatings Inspector-Level 2 / # 44794