



SECTION J

TANK 2A INSPECTION REPORT

CSA 64 RECOATING TANKS 2A AND 2B PROJECT

FOR

**COUNTY SERVICE AREA 64
HESPERIA, CALIFORNIA**

PROJECT NO.: 30.30.0115



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Inspection Report for San Bernardino County

06/27/2019

60' Diameter x 32' High Steel Welded On-Grade

667KG CSA 64 2A Tank

San Bernardino, CA

Diver: Paul Madden

Tender: Ian Stephens

Stand-by: Chris Storey





Utility: San Bernardino County

Date: June 27th, 2019

Attn: Chris Bishop

Inspection Details

This is an inspection report completed on June 27th, 2019 for San Bernardino County by Marine Diving Solutions, LLC. Marine Diving Solutions employs commercial divers to provide thorough exterior and interior inspections. We do not employ engineering consultants. This report was produced from the divers' visual inspection findings and our HD quality videos.

Diving Procedures

All of Marine Diving Solution's divers have graduated from accredited dive programs and have undergone further company training on water tank and reservoir operations. All work is completed per OSHA, AWWA and ANSI standards.

MDS's potable dive equipment is dedicated to only diving in potable water as to not cause any cross contamination. Our divers are sealed in a dry suit and dive helmet to ensure no part of their body comes in contact with the water. They are then disinfected with a 200ppm chlorine solution to meet AWWA and state standards. The diver is then free to go into the confined space inside the water storage tanks. Underwater, the diver can do a more detailed inspection or clean the loose sediment from the floor of the tank. All diving operations are conducted to meet all AWWA, OSHA and Navy Diving standards. MDS's dive crew uses a 3" trash pump with a vacuum attachment to remove the sediment at a rate of 200-300gpm. The dive crew is able to perform all of the cleaning and inspections while the tank is left online and without disturbing any of the distribution. MDS's dive crew is trained in all aspects in a wide variety of tanks and are also capable of doing in water repairs that are within AWWA, OSHA and NSF standards.

EXTERIOR

Wall Panels

Coating Conditions Overall: Good.

De-lamination of the coating: Yes No

Percent of De-lamination: 2%.

Uniform Surface Corrosion: Yes No

Percent of USC: 2%.

De-alloying present: Yes No

Percent of De-alloying: N/A.

Dents Present: Yes No

Summary: The exterior wall panels have good coating conditions overall. De-lamination and surface corrosion noted.



EXTERIOR

Ladder

Coating Conditions Overall: Good/ Fair.

De-lamination of the coating: Yes No

Percent of De-lamination: 3%.

Uniform Surface Corrosion: Yes No

Percent of USC: 3%.

De-alloying present: Yes No

Percent of De-alloying: N/A.

Safety Climb Present: Yes No

Type of safety climb: Cage.

Support Condition: Good.

Summary: The exterior ladder has good to fair coating conditions overall. De-lamination and surface corrosion present. The ladder rungs are $\frac{3}{4}$ " in diameter. The ladder width is at least 16" and the distance between the ladder and tank is 9.75".



EXTERIOR

Manway (s)

Coating Conditions Overall: Fair.

De-lamination of the coating: Yes No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: Yes No

Percent of USC: 5%.

De-alloying present: Yes No

Percent of De-alloying: N/A.

Bolts missing: Yes No

Leakage Present: Yes No

Summary: The manway has fair coating conditions overall. Minor de-lamination occurring. Surface corrosion noted.



EXTERIOR

Foundation

Foundation Present: Yes No

Concrete Foundation: Yes No

Cracking Present: Yes No

Type of Cracking: N/A.

Spalling Present: Yes No

Depth of Spalling: N/A.

Anchor Bolts Exposed: Yes No

Undermining of Foundation Present: Yes No

Summary: The foundation consists of a metal foundation ring with gravel fill.



EXTERIOR

Overflow

Coating Conditions Overall: Good.

De-lamination of the coating: Yes No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: Yes No

Percent of USC: 1%.

De-alloying present: Yes No

Percent of De-alloying: N/A.

End Cap Present: Yes No

Fine Mesh Screen Present: Yes No

Support Condition: Good.

Summary: The overflow has good coating conditions overall. Minor de-lamination and surface corrosion noted.



EXTERIOR

Roof Panels

Coating Conditions Overall: Good.

De-lamination of the coating: Yes No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: Yes No

Percent of USC: 1%.

De-alloying present: Yes No

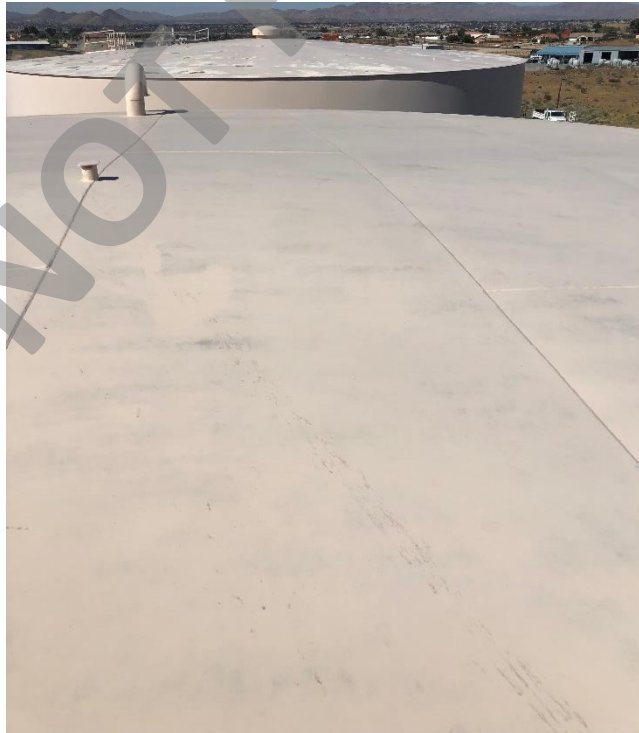
Percent of De-alloying: N/A.

Cathodic protection plates present: Yes No

Cathodic protection plates missing: Yes No

Low Spots Present: Yes No

Summary: The roof panels have good coating conditions overall. Minor de-lamination and surface corrosion present.



EXTERIOR

Hatch

Coating Conditions Overall: Fair.

De-lamination of the coating: Yes No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: Yes No

Percent of USC: 4%.

De-alloying present: Yes No

Percent of De-alloying: N/A.

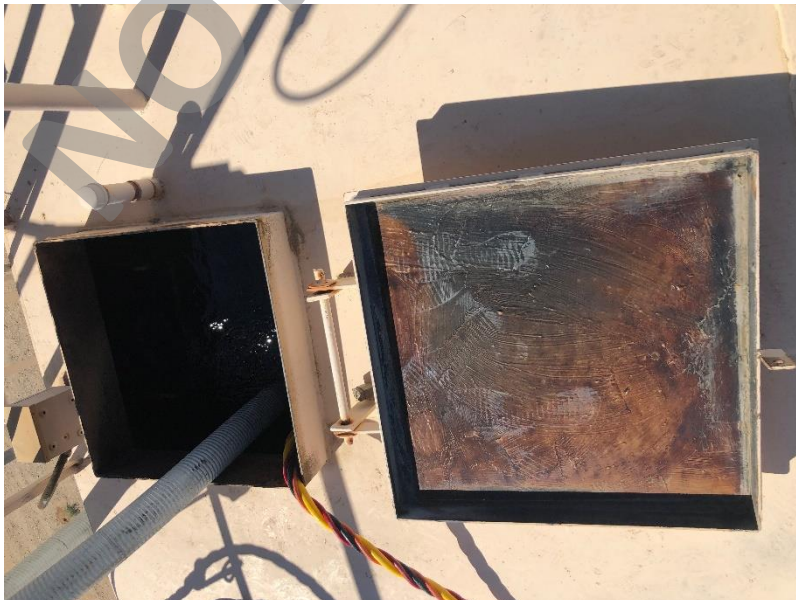
Hatch Found Locked: Yes No

Gasket Present: Yes No

Gasket Condition: N/A.

Size of Hatch: 2' x 2'.

Summary: The hatch has fair coating conditions overall. Minor de-lamination occurring. Surface corrosion noted. Recommend installing a gasket to the hatch to prevent bugs/insects from entering tank.



EXTERIOR

Vents

Coating Conditions Overall: Good/ Fair.

De-lamination of the coating: Yes No

Percent of De-lamination: 1%.

Uniform Surface Corrosion: Yes No

Percent of USC: 1%/ 5%.

De-alloying present: Yes No

Percent of De-alloying: N/A.

Fine Mesh Screen Present: Yes No

Vent Cap Condition: Good.

Frost Proof Vent: Yes No

Summary: The one vent has good coating conditions with minor de-lamination and surface corrosion. The other vent has fair coating due to surface corrosion and minor de-lamination. Fine mesh screens are present and intact.



INTERIOR

Ladder

Coating Conditions Overall: Poor.

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 50%.

De-alloying present: Yes No

Percent of De-alloying: 2-3%.

Blistering Present: Yes No

Percent of Blistering: N/A.

Safety Climb Present: Yes No

Type of safety climb and deficiencies noted: N/A.

Support Condition: Fair.

Summary: The interior ladder has poor coating conditions overall. Heavy surface corrosion noted. De-alloying occurring. Oil accumulating on the upper ladder portion. The coating is cracking on 75% of the ladder.



INTERIOR

Wall Panels

Coating Conditions Overall: Poor.

De-lamination of the coating: Yes No

Percent of De-lamination: 3-5%.

Uniform Surface Corrosion: Yes No

Percent of USC: 25-50%.

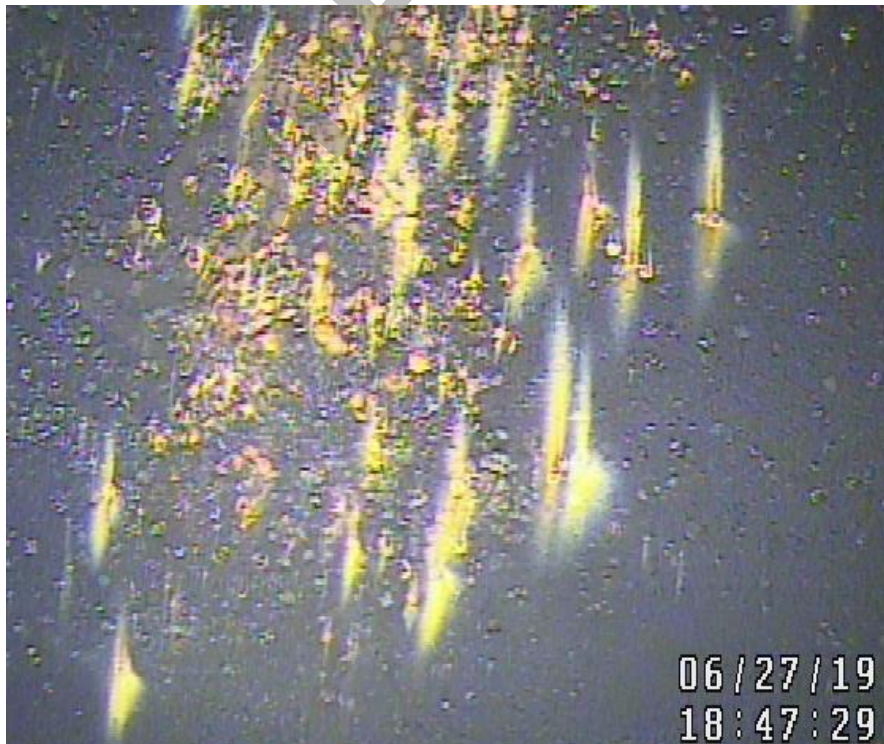
De-alloying present: Yes No

Percent of De-alloying: 1-2%.

Blistering Present: Yes No

Percent of Blistering: 25%.

Summary: The interior wall panels have poor coating conditions overall. De-alloying present at the 4:30 position. Pitting up to 1/8" in depth. The coating is uneven and is cracking heavily. Oil build-up noted on the top panels. Blistering occurring on the upper panels as well.



INTERIOR

Floor Panels

Coating Conditions Overall: Poor.

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 5-10%.

De-alloying present: Yes No

Percent of De-alloying: Less than 1%.

Blistering Present: Yes No

Percent of Blistering: N/A.

Abnormal Sediment: Yes No

Summary: The floor panels have poor coating conditions overall. Surface corrosion noted. The coating is uneven and cracking. Minor de-alloying occurring.



INTERIOR

Manway (s)

Position of Manway(s): 11:55.

Coating Conditions Overall: Poor.

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 15%.

Blistering Present: Yes No

Percent of Blistering: N/A.

Summary: The manway has poor coating conditions overall. Heavy surface corrosion present. Severe cracking of the coating.



INTERIOR

Roof Panels

Coating Conditions Overall: Poor.

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 50%.

De-alloying present: Yes No

Percent of De-alloying: 10%.

Seam Condition: Good.

Daylighting Visible: Yes No

Summary: The roof panels have poor coating conditions overall. Heavy surface corrosion noted. De-alloying present on the cross beams. Heavy cracking of the coating occurring.



INTERIOR

Support Column

Coating Conditions Overall: Poor.

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 25-30%.

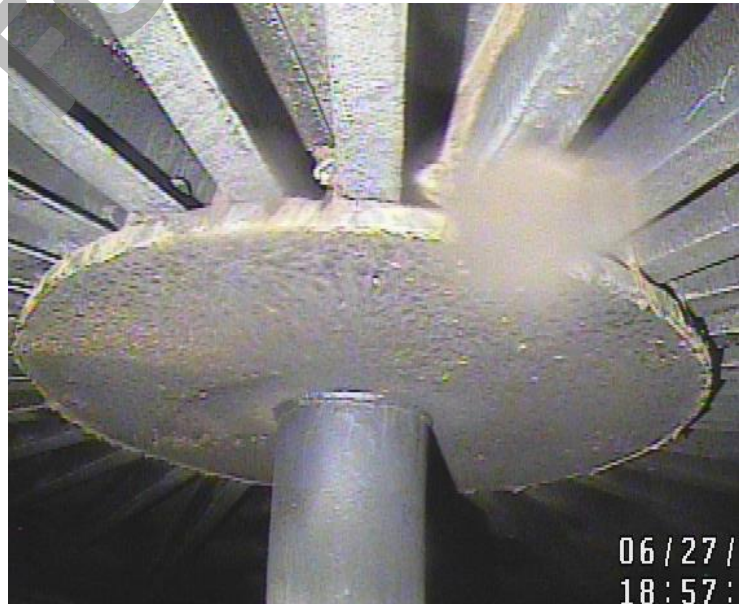
De-alloying present: Yes No

Percent of De-alloying: N/A.

Blistering Present: Yes No

Percent of Blistering: 25%.

Summary: The support column has poor coating conditions overall. Heavy surface corrosion noted. The coating is uneven and cracking. Blistering occurring. Oil build-up forming on the top of the column.



INTERIOR

Inlet/Outlet

Position of Inlet/Outlet: 11:45.

Coating Condition Overall: Poor.

Common Inlet/Outlet: Yes No

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 10-25%.

Blistering Present: Yes No

Percent of Blistering: N/A.

Summary: The inlet/outlet has poor coating conditions overall. Heavy surface corrosion noted. The coating is cracking.



INTERIOR

Drain

Position of Drain: 12:45.

Coating Condition Overall: Poor.

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 50%.

Blistering Present: Yes No

Percent of Blistering: N/A.

Summary: The drain has poor coating conditions overall. Heavy surface corrosion noted.



INTERIOR

Overflow

Position on Overflow: 1:30.

Coating Conditions Overall: Fair.

De-lamination of the coating: Yes No

Percent of De-lamination: N/A.

Uniform Surface Corrosion: Yes No

Percent of USC: 2-3%.

De-alloying present: Yes No

Percent of De-alloying: N/A.

Blistering Present: Yes No

Percent of Blistering: N/A.

Standoff support condition: N/A.

Summary: The overflow has fair coating conditions overall. Surface corrosion noted. Oil build-up present. The coating is cracking.



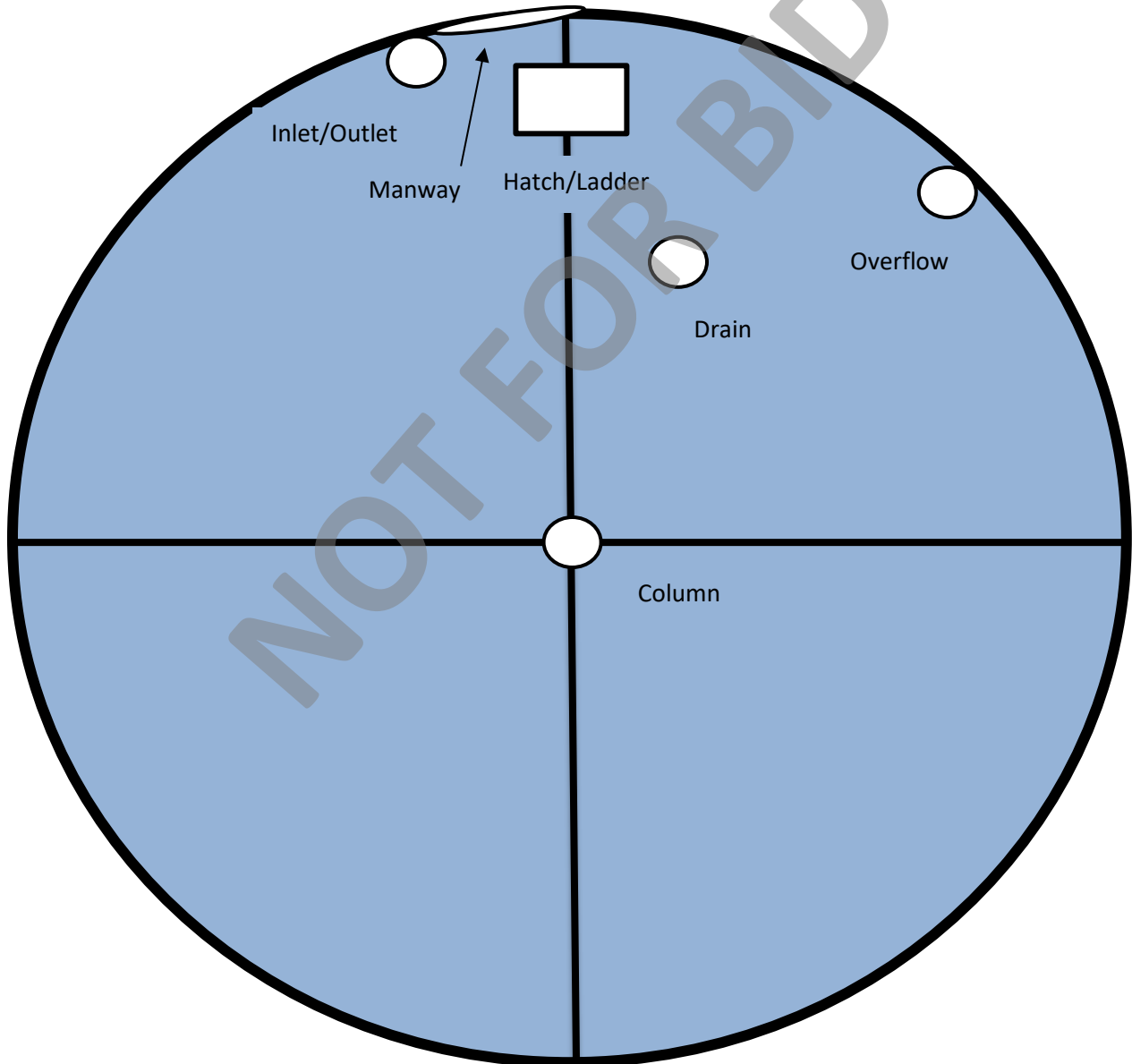


Round Tank

San Bernardino, CA

60' Diameter x 32' High

Steel Welded On-grade- CSA 64 Tank 2A





Post Inspection Recommendations

Tank Description

Tank Type:

Steel Welded On-grade

Dimensions:

60' Diameter x 32' High

Volume (g):

667KG

Type of discrepancies noted

De-lamination

U.S.C.

Blistering

Pitting

De-alloying

C.C.C.

Corrosion Nodules

Abnormal Sediment

Summary

-Recommend installing a hatch gasket to prevent bugs/insects from entering tank.

-Oil build-up noted on the interior of the tank.

-The interior ladder has poor coating conditions due to heavy surface corrosion, cracking of the coating and minor de-alloying.

-The interior coating is in poor condition due to surface corrosion and cracking of the coating. Recommend an interior blast and re-coat to an SSPC SP10.

-De-alloying present on the roof's cross beams.

-Heavy blistering noted on the column and upper wall panels.

-De-alloying present on the interior walls at 4:30. Pitting also visible up to 1/8" in depth.

-Recommend cleaning and inspecting every 3-5 years.

Contact our office at 1-800-637-1322 for repair quotes.