ADDENDUM NO. 4
TO THE
CONTRACT DOCUMENTS
FOR

City of Port Orchard, Washington
MCCORMICK WOODS WELL 11 SITE IMPROVEMENT PROJECT

THIS ADDENDUM IS HEREBY MADE A PART OF THE CONTRACT DOCUMENTS TO THE SAME EXTENT AS THOUGH IT WERE ORIGINALLY INCLUDED THEREIN.

BIDDERS MUST ACKNOWLEDGE RECEIPT OF ALL ADDENDA ON THE BID PROPOSAL FORM. BID PROPOSALS THAT FAIL TO ACKNOWLEDGE ALL ADDENDA MAY BE CONSIDERED IRREGULAR AND MAY BE REJECTED.

THE DATE AND TIME OF THE BID OPENING HAS BEEN CHANGED TO TUESDAY, JULY 25, 2023 AT 10:00 AM.

ISSUED THIS 19TH DAY OF JULY 2023.

7/19/2023

CONSOR
600 University Street, Suite 300
Seattle, WA 98101

ITEM NO. 1 – Specifications

1. REPLACE the first sentence of the first paragraph of Advertisement for Bids with the following:

   Notice is hereby given that sealed bids will be received at the office of the City Clerk for the City of Port Orchard, 216 Prospect Street, Port Orchard, WA 98366 until 10:30 AM on Tuesday July 25, 2023, at 10:00 am, for construction of the McCormick Woods – Well No. 11 Site Improvement Project, Public Works Project No. 023-010

2. MODIFY Section 1.2.A.1 of 09 97 23.24 Concrete Water Storage Tank Painting as follows:

   The rehabilitation, in their own name, of at least 10 concrete liquid storage tanks, concrete wet wells, or concrete manholes in the last 10 years of equal size or greater, which have been in successful service for a minimum of five (5) years since the work was completed. At least 5 of these shall have been for potable water service.

3. ADD the attached as Appendix F – 2020 Diver Inspection Reports

END OF ADDENDUM NO. 4

APPENDIX F
2020 DIVER INSPECTION REPORTS

Port Orchard
216 Prospect Street
Port Orchard, WA 98366

DIVER INSPECTION REPORT

McCormick #1

60,000
~~70,000~~ **Gallon ON-GRADE CONCRETE RESERVOIR**

Summary of Contents:

Written Report with Recommendations
Repair Cost Estimates
Diver Inspection DVD
Photo CD

2948 E Badger Way, New Harmony UT 84757 1-866-237-3483

INSPECTION REPORT

McCormick #1
60,000 ~~70,000~~ Gallon
On-Grade Welded Steel
Dimensions: ~~40'~~ Dia. x 15'H 25'
Inspection Date: 08-06-2020

Section A-1: General
An inspection and cleaning of the ground level water tank known as *McCormick #1,* at *Port Orchard,* WA, was conducted by Advanced Diving Services Inc. on August 6, 2020 per construction contract # C057-20.

The inspection was conducted by certified dive personnel. A DVD is included with this report to provide video documentation of the inspection and cleaning work completed.

Sec. A-1.1 Scope
Every steel water storage tank, standpipe, or reservoir should be carefully inspected prior to repair and/or repainting and at any time when leakage or some other apparent deterioration is observed. In any event, **all water tanks should be thoroughly inspected at intervals of not more than five years** (*American Water Works Association*, M42 1998, p 132).

Sec. A-1.2 Inspection Service
Advanced Diving Services Incorporated (ADS) began commercially inspecting water storage tanks in April, 2000. ADS is certified in Commercial Diving, Offshore Safety & Survival, Red Cross CPR and First Aid, Hazardous Materials Incident, Response Operations, YMCA Advanced Scuba, Liquid Penetrant - Levels I & II, Magnetic Particle - Levels I & II, Ultrasonic - Levels I & II, Rope Access Technician - Level I, Chevron Riggers
Endorsement and Nuclear Quality Assurance.

ADS adhere to American Water Works Association standards for inspecting and repairing water tanks, AWWA D101-53. All Dive Maintenance Technicians and associated in-tank equipment are fully disinfected according to AWWA Standard C652-11 before entering potable water. All ADS operations pertaining to Diving and Confined Space, conducted on your system are in compliance with all applicable OSHA, AWWA, and ADCI standards, procedures, and regulations (including 1910.401 thru 1910.441). All inspection personnel are fully qualified commercial dive maintenance technicians certified in ASNT Non-Destructive testing. All of our repair, sealing and coating materials meet or exceed NSF 60 & 61 standards.

Sec. A-1.3 Responsibility
Advanced Diving Services (ADS), is fully licensed and insured to provide commercial diving services. ADS carries property damage and liability insurance with a combined single limit per occurrence of $1,000,000, aggregate $2,000,000. ADS reasonably protects the tank/reservoir owner/agent against claims arising out of the inspection or cleaning work we provide.

Sec. A-1.4 Draining of Tank
During inspection and or cleaning, reservoir water levels must be kept at or near full capacity unless noted otherwise. On the date of inspection water level was near full capacity.

Sec. A-1.5 Work Included
Inspections include field examination of the tank exterior and a full color video report of the tank interior conducted by certified dive personnel. Inspection work does not include repairs, except that, if vent screens, cotter pins or nut pins are found to be missing, they may be replaced at once, or reported promptly to the tank/reservoir owner/agent for replacement. On the day of inspection ADS found no immediately reportable repairs.

Section A-2:
Executive Report Summary

Sec. A-2.1 Condition of Coating

Exterior Walls / Roof
The exterior walls and roof are in fair condition with calcium deposits and residue covering the reservoir. **Recommend pressure washing reservoir exterior to remove residue.** (see pictures #3-8).
Interior Walls
The interior walls and epoxy repairs are in good condition. There are cracks on the lower courses of quadrant 3 and 4 but no leakage was observed (see pictures #21-24).
Interior Ceiling
The ceiling is in good condition.
Tank Floor
The tank floor was covered with a light coating of sediment prior to cleaning. The floor is in good condition.

Sec. A-2.2 Pitting

There **was no measurable pitting** observed on the interior walls and the floor during the inspection.

Sec. A-2.3 General Tank Condition

Site Condition
The site is in good condition with no grade concerns.
Site Security
No security breaches were observed during inspection.
Exterior Ladder
Ladder is in good condition.
Roof Access Hatch
Corrosion observed on hatch interior. A lock is in place (see pictures #6,11-13). **Recommend installing gasket on the roof access hatch to prevent entry of insects and or runoff and meet Washington Administrative Code 246-290-235 (1) (a).**
Vents and Screens
Roof vent and screen are in good condition. **Recommend installing a coarse screen on roof vent to protect fine mesh screen from damage.** Mild corrosion is present on the interior of the vent.
Interior Ladder
The interior ladder is in good condition with few nodules present on ladder. Brackets and bolts are in good condition with only minor corrosion (see pictures #13,18-20).
Interior Plumbing
The inlet and outlet pipes are in good condition with only mild staining and corrosion. The interior of the overflow pipe has corrosion and nodules (see pictures #17,25,27).
Cathodic Protection
No protection present.
Water Condition
There were no particulates in the water. Water visibility was good. No oil was found on the surface.
OSHA Standards
Recommend installing a Confined Space Entry placard on roof access hatch.

Sec. A-2.4 Repair Work Performed

Cleaning/removal of sediment from the reservoir floor and horizontal surfaces was provided. No other maintenance or repairs were provided prior to or at the time of inspection.

Sec. A-2.5 Recommendations

See page 16 for a list of recommendations and cost estimates.

(#1) Site / External Plumbing

(#2) Foundation / Overflow / Pump house

(#3) Foundation

(#4) Exterior Shell Seam

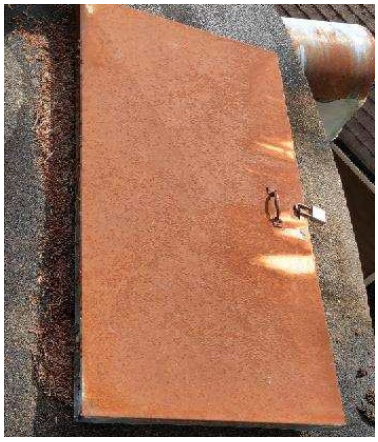
(#5) Overflow

(#6) Roof 12 O'clock

(#7) Roof 3 O'clock

(#10) Roof Vent Screen

(#8) Roof 6 O'clock



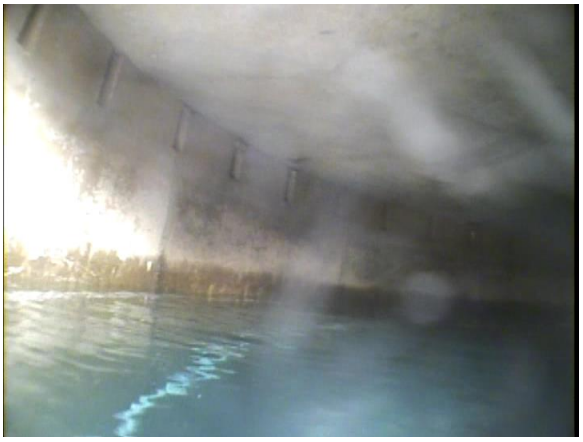
(#11) Roof Access Hatch

(#9) Roof Vent

(#12) Roof Access Hatch Gasket

(#13) Hatch Interior

(#16) Ceiling 9 O'clock / Float



(#14) Ceiling 3 O'clock

(#17) Overflow

(#15) Ceiling 6 O'clock

(#18) Interior Ladder Rust Nodules

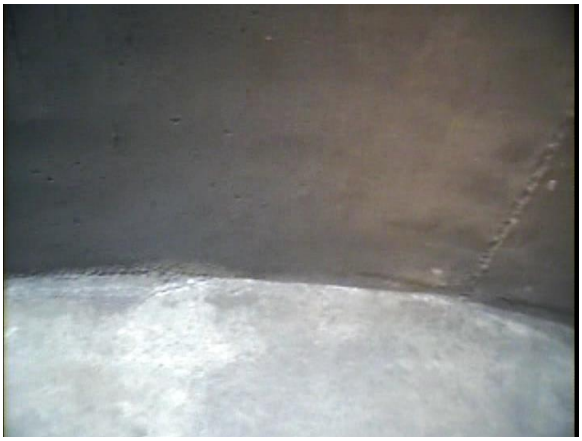
(#19) Interior Ladder Bracket

(#22) Wall Crack Quadrant 3

(#20) Interior Ladder Base

(#23) Wall Crack Quadrant 4

(#21) Wall Course 2 Quadrant 1



(#24) Floor Wall Seam Quadrant 1

(#25) Outlet

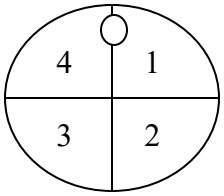
(#28) Telemetry

(#26) Floor Quadrant 3

(#29) Sediment Removal

(#27) Inlet

Tank Quadrants:
Access Hatch O = Origin
Q1 12:00-3:00
Q2 3:00-6:00
Q3 6:0009:00
Q4 9:00-12:00



Section A-3: Detailed Report of Inspection

INSPECTION AND RESERVOIR DATA

Customer Name:	City of Port Orchard	**Reservoir Name:**	McCormick #1
Contact Person:	Tony Lang	Location:	Port Orchard, WA
Contact Phone:	(360) 535-2490	Type:	On-Grade
Job Number:	Proposal JN-20-170	Material:	Concrete
Inspection Date:	08/06/2020	Capacity:	~~70,00~~ Gallons 60,000
Dive Supervisor:	Kelly Allen	Diameter:	~~40~~' 25'
Diver:	Eduardo Barnett	Height:	15’
Tender:	Charles Eagle	Floor S.F.:	
Last Inspection:	n/a	Built By:	
Last Cleaned By:	n/a	Built Date:	
		Courses	3

A-3.2 TANK EXTERIOR

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, structural or like, immediate repairs needed.

Reservoir Exterior	**Condition**					**Pictures**	**Comments**
Component	NA	Ex	Good	Fair	Poor	#'s	
Site Security							
Protective Fence			X				
Lock on Gate/Ladder			X				
Out Building(s) 1	X					2,5	Pump house
Exterior Ladder			X			6	
Foundation							
Concrete			X			2,3	
Anchor Bolts	X						
Column Shoes	X						
Tower Posts	X						
Cotter Pins	X						
Riser Pipe	X						
Vertical Condition	X						
Stay Rods	X						
Frost Casing	X						

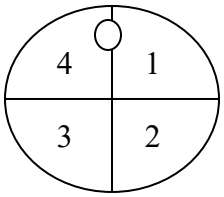
Continued

TANK EXTERIOR (Continued)

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, structural or like, immediate repairs needed.

Reservoir Exterior	**Condition**					**Pictures**	**Comments**
Component	NA	Ex	Good	Fair	Poor	#'s	
Indications of Leakage			X				
Riser Pipe	X						
Expansion joints	X						
Balcony	X						
Balcony Floor	X						
Reservoir Exterior							
Course 1				X		3-5,	Residue
Course 2				X		4,5	Residue
Course 3				X		4,5	Residue
Exterior Roof							
Quadrant 1			X			6	
Quadrant 2			X			7,8	
Quadrant 3			X			8,	
Quadrant 4			X			6,	
Vents (1)							
Roof Vents					X	6-10,	
Side Vents	X						
Vent Screen(s)					X	10	Install coarse screen
Telemetry			X				
Liquid Level Indicator	X						
Manway Access	X						
Antenna	X						
Access Hatch			X			6,11,12	Install gasket
Plumbing							
Overflow			X			2,5	
Other			X			1	
Exterior Paint Condition							
Tank Sides				X			Residue
Tank Roof			X				
Overall Ext. Condition				X			

Tank Quadrants:
Access Hatch O = Origin
Q1 12:00-3:00
Q2 3:00-6:00
Q3 6:0009:00
Q4 9:00-12:00



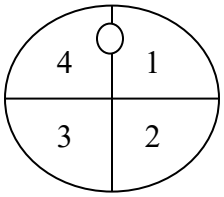
A-3.3 TANK INTERIOR

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, structural or like, immediate repairs needed.

Reservoir Interior	**Condition**					**Pictures**	**Comments**
Component	NA	Ex	Good	Fair	Poor	#'s	
Access							
Ladder			X			13,18-20	Nodules
Access Hatch (1)			X			13,	
Plumbing							
Outlet			X			25	Corrosion inside pipe
Inlet			X			27	
Overflow			X			17	Corrosion inside pipe, nodules
Columns							
Center Support Column	X						
Satellite Columns (0)	X						
Manway Access	X						
Water Float	X						
Cathodic Protection	X						
Assembly	X						
Float	X						
Anodes (0)	X						
Telemetry (1)			X			28	
Ceiling							
Quadrant 1			X			14,15	
Quadrant 2			X			14,15	
Quadrant 3			X			15	
Quadrant 4			X			16,17	
Floor							
Quadrant 1			X			20,24	
Quadrant 2			X			25	
Quadrant 3			X			26,27	
Quadrant 4			X			23,28	

(Continued)

Tank Quadrants:
Access Hatch O = Origin
Q1 12:00-3:00
Q2 3:00-6:00
Q3 6:0009:00
Q4 9:00-12:00



TANK INTERIOR (continued)

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, stuctural or like,immediate repairs needed.

Reservoir Interior	**Condition**					**Pictures**	**Comments**
Componet	NA	Ex	Good	Fair	Poor	#'s	
Wall							
Quadrant 1							
Course 1 (Lowest)			X			19,20,24	
Course 2			X			18,21	
Course 3			X			14,15	
Quadrant 2							
Course 1 (Lowest)			X				
Course 2			X				
Course 3			X			14,15	
Quadrant 3							
Course 1 (Lowest)				X		22	Cracks
Course 2			X				
Course 3			X			15	
Quadrant 4							
Course 1 (Lowest)				X		23,28	Cracks
Course 2			X				
Course 3			X			16,17	
Sediment							
Quadrant 1		X					1/16" loose silt
Quadrant 2		X					1/16" loose silt
Quadrant 3		X					1/16" loose silt
Quadrant 4		X					1/16" loose silt
Water Condition			X				No oil onsurface
Particulates			X				none
Visability			X				Good
Temperature		X					Cold
Overall Interior Condition			X				

A-3.4 Tank Technical Testing

Dry-Film Thickness

Dry-film thickness (DFT) is the thickness of a coating after it has cured. DFT measurements on the tank were **NOT** taken on 08/06/2020. DFT measurements were recorded using a PosiTest Model FM Coating Thickness Gage developed for the non-destructive measurement of non-magnetic coatings on ferrous surfaces. The PosiTest® FM Coating Thickness Gage is a magnetic pull-off thickness gage. Testing with magnetic gages is sensitive to surface roughness, curvature, substrate thickness, and the make-up of the metal alloy. Typical tolerance is ± 5%.

Advanced Diving Services employs this test method to allow us to test both interior and exterior tank surfaces. No surfaces were tested on this *reservoir*.

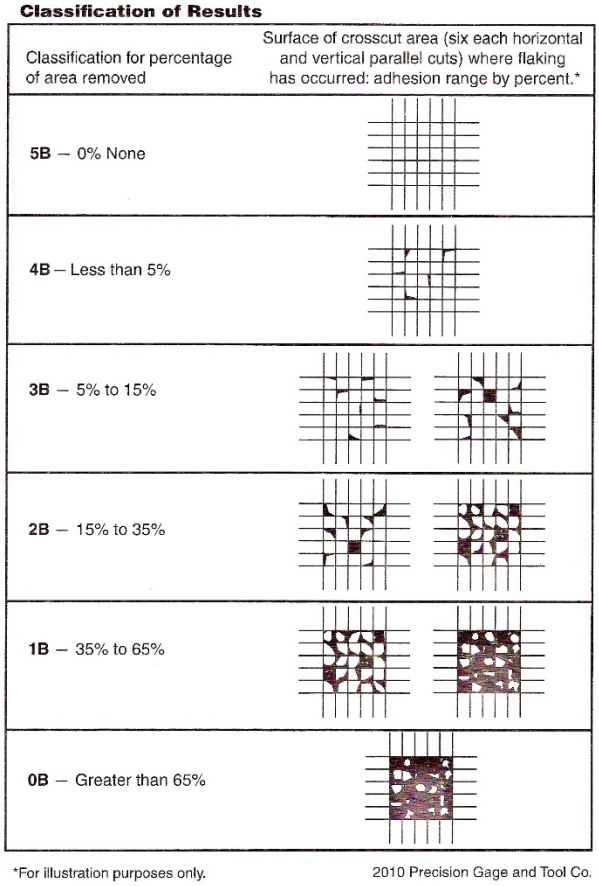
The readings were NOT taken from various spots of the tank exterior. Six to eight readings were NOT taken from each quadrant.

DFT readings were as follows:

EXTERIOR DRY FILM THICKNESS IN MILS				
DFT Reading	Quadrant #1	Quadrant #2	Quadrant #3	Quadrant #4
1				
2				
3				
4				
5				
6				
Minimum				
Maximum				
Average	0.0	0.0	0.0	0.0

Cross-Cut Tape Test

ADS conducted NO ASTM D-3359 coating adhesion and flexibility tests on the exterior of the reservoir.



Paint Samples

Collection of internal and external paint samples for metal analysis was not conducted by ADS at JBLM in 2020.

Ultrasonic Testing

Advanced Diving Services Incorporated employs a Cygnus *Instruments Dive,* digital ultrasonic multiple-echo thickness gauge to provide accurate measurement(s) of metal thickness.

The gauge was last calibrated by *Cygnus* on XXXX. *Cygnus Instruments* declares accuracy of 0.1 mm when calibrated in accordance with *Cygnus Instruments* calibration procedures.

The reservoir was not tested floor thickness in each quadrant. Results are as follows:

Measurements: Redwood Tank			
Name	Thickness	Units	Probe Type
Quadrant 1		mm	2.25 MHz 13 mm
Quadrant 2		mm	2.25 MHz 13 mm
Quadrant 3		mm	2.25 MHz 13 mm
Quadrant 4		mm	2.25 MHz 13 mm

Corrosion Evaluation

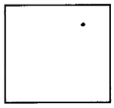
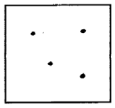
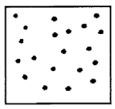
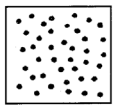
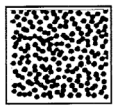
The tank interior showed minimal corrosion. Corrosion density was between 0 and 1 on the ASTM standard rating chart.

The interior ceiling showed minimal corrosion. Corrosion density was between 0 and 1 on the ASTM standard rating chart.

The interior floor showed minimal corrosion. Corrosion density was between 0 and 1 on the ASTM standard rating chart.

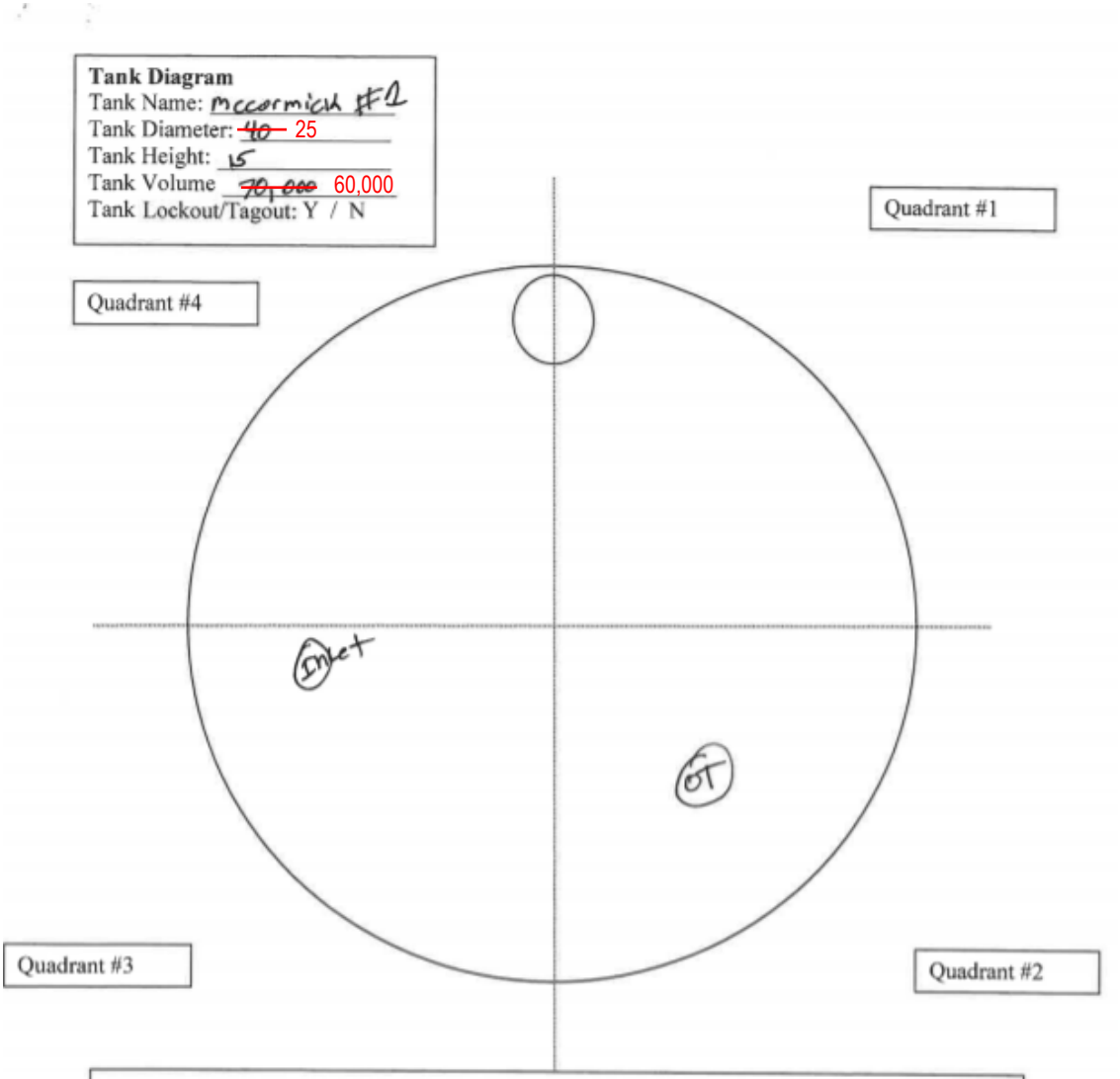
The interior corrosion was not pervasive, and the areas effected varied by size. The depth of corrosion was not measured.

STANDARD RATING CHART FOR PITS

	A Density	B Size	C Depth
1	 $2.5 \times 10^3/m^2$	0.5 mm^2	0.4 mm
2	 $1 \times 10^4/m^2$	2.0 mm^2	0.8 mm
3	 $5 \times 10^4/m^2$	8.0 mm^2	1.6 mm
4	 $1 \times 10^5/m^2$	12.5 mm^2	3.2 mm
5	 $5 \times 10^5/m^2$	24.5 mm^2	6.4 mm

Source: ASTM, G 46, Fig. 2 (2000 Edition). Reprinted, with permission, copyright ASTM.

Tank Interior Sketch



Mark the location and size of:

1. **V** = Roof Vents **DIAMETER NEEDED**
2. **IN** = Inlet (s) **DIAMETER NEEDED**
3. **OT** = Outlet (s) **DIAMETER NEEDED**
4. **D** = Drain **DIAMETER NEEDED**
5. **C** = Support Columns
6. **OV** = Overflow Pipe
7. **F** = Float
8. **CP** = Cathodic Protection
9. D = Tank Debris
10. **ST** = Sampling Tap
11. **MW** = Manway Access Hatch (s)
12. **OP** = Other pipe penetrations
13. **Z** = Vandalism
14. **CF** = Exterior Coating Failure Area(s)
15. **IF** = Interior Coating Failure Area(s)
16. **RN** = Significant Rust Nodules
17. **H** = Second Roof Access Hatch **DIA. NEEDED**
18. **L** = Leak in tank

ADS, Inspection Report, p. 2

Conclusion and Recommendations

Tank Condition

EXTERIOR: FAIR
INTERIOR: GOOD

Recommendations

Immediate

1. **Pressure wash exterior to remove residue on reservoir.**
2. **Install coarse screen on roof vent to prevent damage to the fine mesh screen.**
3. **Install gasket on the roof access hatch to provide weather tight roof as per WAC 246-290-235 (1) (a).**
4. **Install OSHA confined space placard on roof access hatch.**

Ongoing Maintenance

5. **Inspection and cleaning every 1-3 years.**
    a. **All water tanks should be thoroughly inspected at intervals of not more than five years** (*American Water Works Association*, M42 1998, p 132).

#	RECOMMENDATION(S)	Time Estimate	Count	Unit Cost	Total
	IMMEDIATE REPAIR				
1	**Install Roof Vent Screen -Heavy 0001**	1 hour	1	$275.00	$275.00
2	**Install OSHA confined space placard**	30 minutes	1	$48.00	$48.00
3	**Install roof access hatch gasket**	1 week	1	$238.00	$238.00
4	**Pressure Wash Exterior**	1 day	1	$3,900.00	$3,900.00
	ONGOING MAINTENANCE				

All surface and underwater repairs and recommendations, except sandblasting, can be performed by Advanced Diving Services, Inc. with the reservoir remaining in service.

ADVANCED DIVING SERVICES, INC. ®

James M. Nilsson, Director

Port Orchard
216 Prospect Street
Port Orchard, WA 98366

DIVER INSPECTION REPORT

McCormick #2

60,000
~~**70,000**~~ **Gallon ON-GRADE CONCRETE RESERVOIR**

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2948 E Badger Way, New Harmony UT 84757 1-866-237-3483

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On-Grade Concrete

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Advanced Diving Services (ADS), is fully licensed and insured to provide commercial diving services. ADS carries property damage and liability insurance with a combined single limit per occurrence of $1,000,000, aggregate $2,000,000. ADS reasonably protects the tank/reservoir owner/agent against claims arising out of the inspection or cleaning work we provide.

Sec. A-1.4 Draining of Tank

During inspection and or cleaning, reservoir water levels must be kept at or near full capacity unless noted otherwise. On the date of inspection water level was near full capacity.

Sec. A-1.5 Work Included

Inspections include field examination of the tank exterior and a full color video report of the tank interior conducted by certified dive personnel. Inspection work does not include repairs, except that, if vent screens, cotter pins or nut pins are found to be missing, they may be replaced at once, or reported promptly to the tank/reservoir owner/agent for replacement. On the day of inspection ADS found no immediately reportable repairs.

Section A-2:
Executive Report Summary

Sec. A-2.1 Condition of Coating

Exterior Walls / Roof
The exterior walls and roof are in fair condition with calcium deposits on shell and extensive moss growth on roof (see pictures #1-6). **Recommend pressure washing reservoir exterior to remove residue and moss bio-growth from roof.**
Interior Walls
The interior walls and epoxy repairs are in good condition. There are cracks on the lower courses of quadrant 3 and 4 but no leakage was observed (see pictures #10-13,15-18).
Interior Ceiling
The ceiling is in good condition.
Tank Floor
The tank floor was covered with a light coating of sediment prior to cleaning. The floor is in good condition.

Sec. A-2.2 Pitting

There **was no measurable pitting** observed on the interior walls and the floor during the inspection.

Sec. A-2.3 General Tank Condition

Site Condition
The site is in good condition with no grade concerns.
Site Security
No security breaches were observed during inspection.
Exterior Ladder
Ladder is in good condition. **Recommend installing safety climb on exterior ladder to meet new OSHA standards, see page 16.**
Roof Access Hatch
Corrosion observed on hatch exterior. A lock is in place and there is a gasket (see pictures #4,8,9). **Recommend replacing gasket on access hatch to meet WAC 246-290-235 (1) (a) for a watertight roof.**
Vents and Screens
Roof vent and screens are in good condition.
Interior Ladder
The interior ladder is in good condition with only mild corrosion. (see pictures #13-15).
Interior Plumbing
The inlet, outlet, and overflow pipes are in good condition. A silt ring is present on the outlet (see pictures #10,20,22).
Cathodic Protection
No protection present.
Water Level Float Indicator
The water level indicator is non-functional. **Recommend reattaching the float assembly in order to make water level indicator functional again.**
Water Condition
There were no particulates in the water. Water visibility was good. No oil was found on the surface.
OSHA Standards
Recommend installing Confined Space Entry placards at base of exterior ladder and on roof access hatch.

Sec. A-2.4 Repair Work Performed

Cleaning/removal of sediment from the reservoir floor and horizontal surfaces was provided. No other maintenance or repairs were provided prior to or at the time of inspection.

Sec. A-2.5 Recommendations

See page 15 for a list of recommendations and cost estimates.

(#1) Foundation

(#4) Roof Railing

(#2) / Overflow

(#5) Roof

(#3) Storyboard

(#6) Roof 9 O'clock

(#7) Roof Vent

(#10) Ceiling 3 O'clock / Overflow

(#8) Roof Access Hatch

(#11) Ceiling 6 O'clock

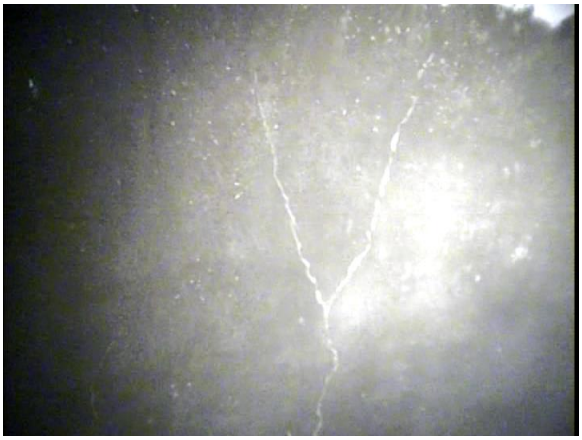
(#9) Roof Access Hatch Gasket

(#12) Ceiling 9 O'clock

(#13) Interior Ladder Upper

(#16) Wall Quadrant 1

(#14) Float Cable



(#17) Wall Quadrant 3

(#15) Interior Ladder Base

(#18) Wall Quadrant 4

(#19) Floor Wall Seam Quadrant 1

(#22) Outlet

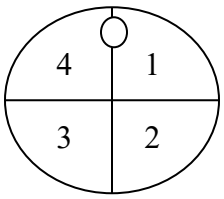
(#20) Inlet

(#23) Floor Quadrant 4

(#21) Floor Quadrant 2

(#24) Sediment Removal

Tank Quadrants:
Access Hatch O = Origin
Q1 12:00-3:00
Q2 3:00-6:00
Q3 6:0009:00
Q4 9:00-12:00



Section A-3: Detailed Report of Inspection

INSPECTION AND RESERVOIR DATA

Customer Name:	City of Port Orchard	**Reservoir Name:**	McCormick #2
Contact Person:	Tony Lang	Location:	Port Orchard, WA
Contact Phone:	(360) 535-2490	Type:	On-Grade
Job Number:	Proposal JN-20-170	Material:	Concrete
Inspection Date:	08/06/2020	Capacity:	~~70,00~~ Gallons 60,000
Dive Supervisor:	Kelly Allen	Diameter:	~~40~~' 25'
Diver:	Eduardo Barnett	Height:	15’
Tender:	Charles Eagle	Floor S.F.:	
Last Inspection:	n/a	Built By:	
Last Cleaned By:	n/a	Built Date:	
		Courses	3

A-3.2 TANK EXTERIOR

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, structural or like, immediate repairs needed.

Reservoir Exterior	**Condition**					**Pictures**	**Comments**
Component	NA	Ex	Good	Fair	Poor	#'s	
Site Security							
Protective Fence			X				
Lock on Gate/Ladder			X				
Out Building(s) 1	X						Pump house
Exterior Ladder				X		3,4	Install safety climb
Foundation							
Concrete			X			1	
Anchor Bolts	X						
Column Shoes	X						
Tower Posts	X						
Cotter Pins	X						
Riser Pipe	X						
Vertical Condition	X						
Stay Rods	X						
Frost Casing	X						

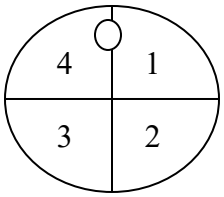
Continued

TANK EXTERIOR (Continued)

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, structural or like, immediate repairs needed.

Reservoir Exterior	**Condition**					**Pictures**	**Comments**
Component	NA	Ex	Good	Fair	Poor	#'s	
Indications of Leakage			X				
Riser Pipe	X						
Expansion joints	X						
Balcony	X						
Balcony Floor	X						
Reservoir Exterior							
Course 1				X		1	Residue
Course 2				X		2-3,	Residue
Course 3				X		2-3,	Residue
Exterior Roof							
Quadrant 1				X		6	Moss
Quadrant 2				X		7,8	Moss
Quadrant 3				X		8,	Moss
Quadrant 4				X		6,	Moss
Vents (1)							
Roof Vents			X			5-7,	
Side Vents	X						
Vent Screen(s)			X				
Telemetry			X				
Liquid Level Indicator					X	3	Non-functional
Manway Access	X						
Antenna	X						
Access Hatch				X		4,8,9	Replace gasket
Plumbing							
Overflow			X			2	
Other			X				
Exterior Paint Condition							
Tank Sides				X		1-3,	Residue
Tank Roof				X		4-7,	Moss
Overall Ext. Condition				X			

Tank Quadrants:
Access Hatch O = Origin
Q1 12:00-3:00
Q2 3:00-6:00
Q3 6:0009:00
Q4 9:00-12:00



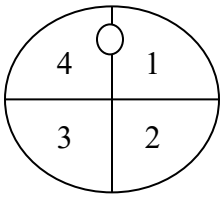
A-3.3 TANK INTERIOR

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, structural or like, immediate repairs needed.

Reservoir Interior	**Condition**					**Pictures**	**Comments**
Component	NA	Ex	Good	Fair	Poor	#'s	
Access							
Ladder			X			9,13-15	
Access Hatch (1)			X			4,8,9	
Plumbing							
Outlet			X			22	
Inlet			X			20	
Overflow			X			10	
Columns							
Center Support Column	X						
Satellite Columns (0)	X						
Manway Access	X						
Water Float					X	14	Broken, needs repair
Cathodic Protection	X						
Assembly	X						
Float	X						
Anodes (0)	X						
Telemetry (1)			X				
Ceiling							
Quadrant 1			X			10	
Quadrant 2			X			10,11	
Quadrant 3			X			11,12	
Quadrant 4			X			12	
Floor							
Quadrant 1			X			19	
Quadrant 2			X			20,21	
Quadrant 3			X			22	
Quadrant 4			X			23	

(Continued)

Tank Quadrants:
Access Hatch O = Origin
Q1 12:00-3:00
Q2 3:00-6:00
Q3 6:0009:00
Q4 9:00-12:00



TANK INTERIOR (continued)

Key: N/A- Not Applicable, **Excellent (**EX**)**- like new condition, no repairs needed. **Good**- Cosmetic problems only, repair if wanted. **Fair**- Minor problems, repairs needed, not immediate. **Poor**- major problems, stuctural or like,immediate repairs needed.

Reservoir Interior	**Condition**					**Pictures**	**Comments**
Componet	NA	Ex	Good	Fair	Poor	#'s	
Wall							
Quadrant 1							
Course 1 (Lowest)			X			15,16	
Course 2			X			14	
Course 3			X			10,13	
Quadrant 2							
Course 1 (Lowest)			X				
Course 2			X				
Course 3			X			10,11	
Quadrant 3							
Course 1 (Lowest)			X			17	Cracks
Course 2			X				
Course 3			X			11,12	
Quadrant 4							
Course 1 (Lowest)			X			18	Cracks
Course 2			X				
Course 3			X			12	
Sediment							
Quadrant 1		X					1/16" loose silt
Quadrant 2		X					1/16" loose silt
Quadrant 3		X					1/16" loose silt
Quadrant 4		X					1/16" loose silt
Water Condition			X				No oil onsurface
Particulates			X				none
Visability			X				Good
Temperature		X					Cold
Overall Interior Condition			X				

A-3.4 Tank Technical Testing

Dry-Film Thickness

Dry-film thickness (DFT) is the thickness of a coating after it has cured. DFT measurements on the tank were **NOT** taken on 08/06/2020. DFT measurements were recorded using a PosiTest Model FM Coating Thickness Gage developed for the non-destructive measurement of non-magnetic coatings on ferrous surfaces. The PosiTest® FM Coating Thickness Gage is a magnetic pull-off thickness gage. Testing with magnetic gages is sensitive to surface roughness, curvature, substrate thickness, and the make-up of the metal alloy. Typical tolerance is ± 5%.

Advanced Diving Services employs this test method to allow us to test both interior and exterior tank surfaces. No surfaces were tested on this *reservoir*.

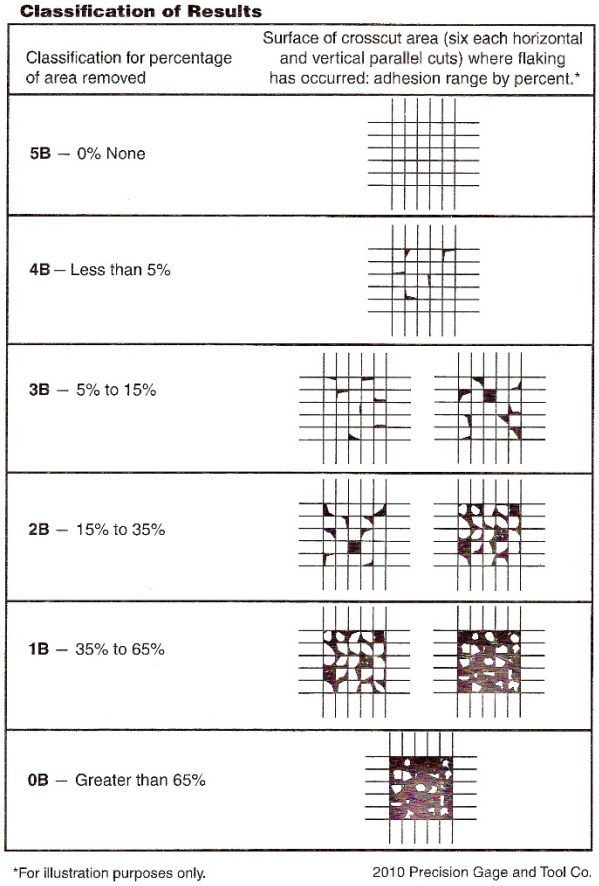
The readings were NOT taken from various spots of the tank exterior. Six to eight readings were NOT taken from each quadrant.

DFT readings were as follows:

EXTERIOR DRY FILM THICKNESS IN MILS				
DFT Reading	Quadrant #1	Quadrant #2	Quadrant #3	Quadrant #4
1				
2				
3				
4				
5				
6				
Minimum				
Maximum				
Average	0.0	0.0	0.0	0.0

Cross-Cut Tape Test

ADS conducted NO ASTM D-3359 coating adhesion and flexibility tests on the exterior of the reservoir.



Paint Samples

Collection of internal and external paint samples for metal analysis was not conducted by ADS at JBLM in 2020.

Ultrasonic Testing

Advanced Diving Services Incorporated employs a Cygnus *Instruments Dive,* digital ultrasonic multiple-echo thickness gauge to provide accurate measurement(s) of metal thickness.

The gauge was last calibrated by *Cygnus* on XXXX. *Cygnus Instruments* declares accuracy of 0.1 mm when calibrated in accordance with *Cygnus Instruments* calibration procedures.

The reservoir was not tested floor thickness in each quadrant. Results are as follows:

Measurements: Redwood Tank			
Name	Thickness	Units	Probe Type
Quadrant 1		mm	2.25 MHz 13 mm
Quadrant 2		mm	2.25 MHz 13 mm
Quadrant 3		mm	2.25 MHz 13 mm
Quadrant 4		mm	2.25 MHz 13 mm

Corrosion Evaluation

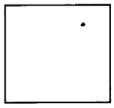
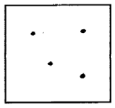
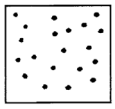
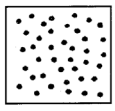
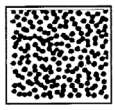
The tank interior showed minimal corrosion. Corrosion density was between 0 and 1 on the ASTM standard rating chart.

The interior ceiling showed minimal corrosion. Corrosion density was between 0 and 1 on the ASTM standard rating chart.

The interior floor showed minimal corrosion. Corrosion density was between 0 and 1 on the ASTM standard rating chart.

The interior corrosion was not pervasive, and the areas effected varied by size. The depth of corrosion was not measured.

STANDARD RATING CHART FOR PITS

	A Density	B Size	C Depth
1	 $2.5 \times 10^3/m^2$	0.5 mm^2	0.4 mm
2	 $1 \times 10^4/m^2$	2.0 mm^2	0.8 mm
3	 $5 \times 10^4/m^2$	8.0 mm^2	1.6 mm
4	 $1 \times 10^5/m^2$	12.5 mm^2	3.2 mm
5	 $5 \times 10^5/m^2$	24.5 mm^2	6.4 mm

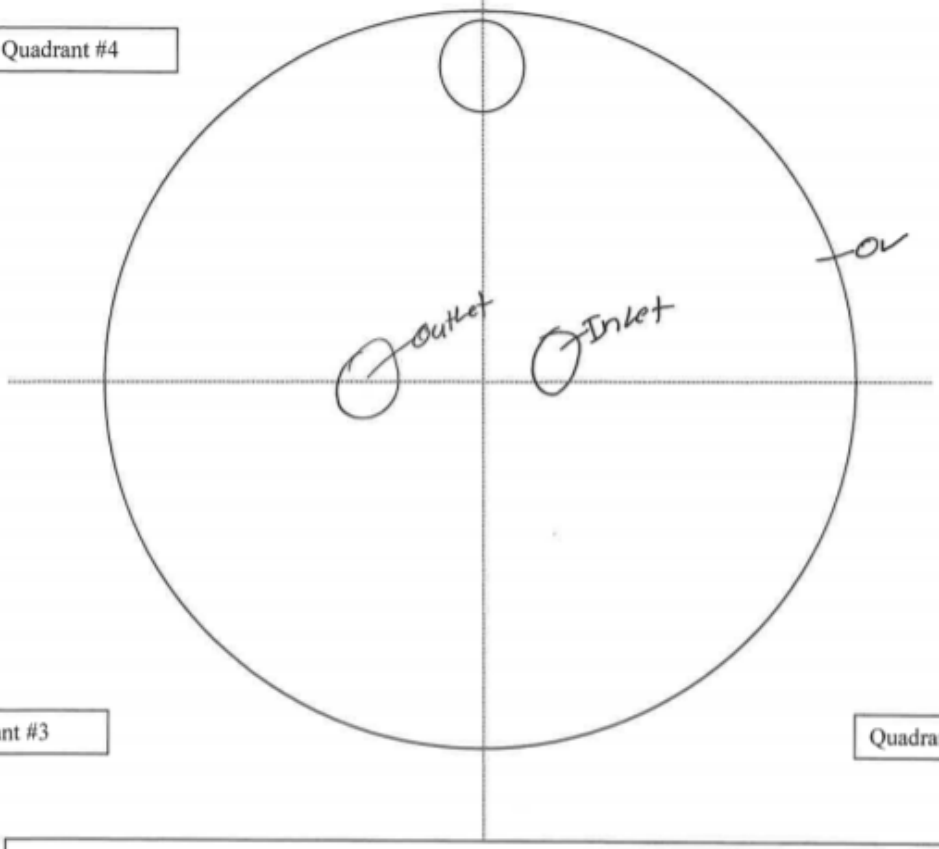
Source: ASTM, G 46, Fig. 2 (2000 Edition). Reprinted, with permission, copyright ASTM.

Tank Interior Sketch

Tank Diagram
Tank Name: McCormick #2
Tank Diameter: ~~40~~ 25
Tank Height: 15
Tank Volume ~~70,000~~ 60,000
Tank Lockout/Tagout: Y / N

Quadrant #1

Quadrant #4



Quadrant #3

Quadrant #2

Mark the location and size of:

1. **V** = Roof Vents **DIAMETER NEEDED**
2. **IN** = Inlet (s) **DIAMETER NEEDED**
3. **OT** = Outlet (s) **DIAMETER NEEDED**
4. **D** = Drain **DIAMETER NEEDED**
5. **C** = Support Columns
6. **OV** = Overflow Pipe
7. **F** = Float
8. **CP** = Cathodic Protection
9. D = Tank Debris
10. **ST** = Sampling Tap
11. **MW** = Manway Access Hatch (s)
12. **OP** = Other pipe penetrations
13. **Z** = Vandalism
14. **CF** = Exterior Coating Failure Area(s)
15. **IF** = Interior Coating Failure Area(s)
16. **RN** = Significant Rust Nodules
17. **H** = Second Roof Access Hatch **DIA. NEEDED**
18. **L** = Leak in tank

ADS, Inspection Report, p. 2

Conclusion and Recommendations

Tank Condition

EXTERIOR: FAIR
INTERIOR: GOOD

Recommendations

Immediate

1. **Pressure wash exterior to remove residue and bio-growth on reservoir.**
2. **Install safety climb on exterior ladder see page 16.**
3. **Replace gasket on the roof access hatch per WAC 246-290-235 (1) (a).**
4. **Reattach float assembly.**
5. **Install OSHA confined space placard on roof access hatch.**

Ongoing Maintenance

6. **Inspection and cleaning every 1-3 years.**
    a. **All water tanks should be thoroughly inspected at intervals of not more than five years** (*American Water Works Association*, M42 1998, p 132).

#	RECOMMENDATION(S)	Time Estimate	Count	Unit Cost	Total
	IMMEDIATE REPAIR				
1	**Pressure wash exterior**	1 day	1	$3,900.00	$3,900.00
2	**Install ladder safety cable**	1 day	1	$3,800.00	$3,800.00
3	**Install OSHA confined space placard**	30 minutes	1	$48.00	$48.00
4	**Replace roof access hatch gasket**	1 week	1	$238.00	$238.00
5	**Reattach float assembly**	1 day	1	$3,600.00	$3,600.00
	ONGOING MAINTENANCE				

All surface and underwater repairs and recommendations, except sandblasting, can be performed by Advanced Diving Services, Inc. with the reservoir remaining in service.

ADVANCED DIVING SERVICES, INC. ®

James M. Nilsson, Director

DIVERSIFIED FALL PROTECTION

Talk to a Fall Protection Compliance Expert:
1-800-504-4016

New OSHA Regs and Ladder Cages

fallprotect.com/techtalk/new-osha-regs-and-ladder-cages

The new OSHA General Industry fall protection regulations that went into effect in 2017 are prompting a slew of questions on fixed ladders. If you are wondering when a fixed ladder requires fall protection, which forms of ladder fall protection are OSHA compliant, or if ladder cages still comply with OSHA's revised ruling, we have just the post for you.....

If you carefully examine the new ruling, you'll note that OSHA 1910.28(b)(9) requires General Industry employers to provide fall protection on fixed ladders more than 24' above a lower level. This new requirement is important for a number of reasons. For starters, prior to the new ruling, the only real guidance on fixed ladders came from the Construction Standards– OSHA more (1926.1053(a)(18) required the use of cages, wells, ladder safety devices, or self-retracting lifelines for fixed ladders of 24 feet or more. OSHA's new ruling was designed, in part, to create more uniformity between the General Industry and Construction standards. That said, the revised ruling also breaks new ground by creating a framework to phase out the use of ladder wells and cages.

From a best practices standpoint, we have never been fans of ladder cages because they don't arrest falls. You can strike your head during a fall, lose consciousness, and create an extremely difficult rescue scenario for first responders. There are also cases of gruesome entanglements where falling workers tear off body parts during a rapid, uncontrolled descent.

The revised ruling establishes a phase out of ladder wells and cages over the next 20 years per OSHA 1910.128(b)(9)(i). Here are the implementation details:

- For caged, fixed ladders erected before November 19, 2018, employers have up to 20 years to install ladder safety or personal fall arrest systems (1910.28(b)(9)(i)(A))
- For new fixed ladders erected on or after November 19,2018, the employer must equip the ladder with a ladder safety or personal fall arrest system (1910.28(b)(9)(i)(B))
- For ladder repairs and replacements, when an employer replaces any portion of a fixed ladder, the replacement must be equipped with a ladder safety or personal fall arrest system (1910.28(b)(9)(i)(C))
- After November 18, 2036 all fixed ladders must be equipped with a ladder safety or personal fall arrest system (1910.28(b)(9)(i)(D))

Important Note: The revised ruling doesn't require removal of ladder cages and wells prior to the final deadline (as long as their presence doesn't interfere with the use of a ladder safety system or personal fall arrest system), but stipulates after the phase-out period, alternative forms of ladder fall protection are required to ensure compliance.

We dedicated this post to a discussion of how the new OSHA regulations effect fixed ladder fall protection options, but the revised Walking-Working Surfaces Ruling is over 500 pages in length and covers a wide range of additional topics relating to ladders. If you are looking for a summary of the new fall protection regulations, we suggest downloading our e-book on this subject, or contact the safety professionals at Diversified Fall Protection for further assistance.