CRYSTALLINE
ENVIRONMENTAL SERVICES

METHOD STATEMENT

WATER TANK REPAIR & LAMINATION

SCOPE:

This method statement covers the procedures for the repair of water tank and lamination.

OBJECTIVE

This Method Statement is for guidance of the staff/technicians who will be involved in carrying out the repair of the water tanks.

- This method statement is to ensure that the work will be executed in an safe and efficient manner.

TOOLS & EQUIPMENTS REQUIRED:

- Submersible pumps, portable exhaust, water discharge hose, water inlet hose, multigas detector, extension cords, vacuum machine, cleaning brushes, wiper, cleaning materials, buckets, ropes with hooks, dust pan, plastic covers.

SAFTEY:

- Barricade the area, all safety measures and precautions shall be maintained.
- Wear all PPE such as helmet, gloves, safety shoe/gum boots, goggles, coverall/uniform, air mask.

PRIOR ACTIVITIES:

- PTW – Permit to work to be obtained

- Briefing the activity to all technicians by supervisor through tool box talk.

RESPONSIBILITIES:

- The supervisor/team leader shall ensure that all tools and equipment are made available sufficiently in advance to the commencement of the work.

PROCEDURE:

CLEANING & DISINFECTION

The tank must be cleaned and disinfected to ensure that water stored in the tank does not become contaminated by dirt or traces of the substance the tank previously held. This can be achieved by following the steps below:

1. The supervisor to brief the team on safety and quality aspects.
2. Wear personal protective equipment. (safety harness and lifeline, impermeable rubber coat, pants, gloves and boots, helmet with face visor.
3. Locate power outlets and water taps.
4. Drain the water remaining in the tank using either the outlet valve (if available) or sumps pumps.
5. Position machines & equipment relative to power supply and water sources.
6. Determine manhole configuration, location, and access to jobsite to prepare for equipment, access strategy and other material requirements.
7. Barricade the area and put warning signs.
8. Ensure that power cords are well insulated and way above water.
9. Open the tank cover and allow to vent for few minutes. Suck out stale air from the storage tank using appropriate air blower equipment.
10. Reverse the air flow direction to blow in fresh air.
11. Leave the solution to soak for about 20 - 30 minutes. The active solution loosens up the biofilm and eradicates pathogens & harmful microorganisms.
12. Clean the internal surfaces of the tank (the sides & Floor) by using a stiff brush or high pressure jet.
13. Take special care to clean corners and joints so that no small amounts of the origin liquid remain.
14. Dry the water tank with a blower. Ensure no moisture is present in the gaps.
15. Remove the tie rods inside the tank followed by removal of the affected panels.
16. Carefully insert the gasket inside the panels and install the panels.
17. Once the panels are in place install the tie rods. Tighten the tie rods slowly.
18. Prepare the surface for lamination. Grind the surfaces of the tank so that the FRP sheet attaches to the surface of the tank firmly.
19. Apply a thin layer of catalyzed resin to the surface and put the FRP chopped strand

mat.

20. Do this for the affected panel joints and let it dry. Once dried. Apply 2 more coats of the resin and FRP chopped strand mat and let it dry for at least 24 hours.
21. Once the curing process is completed rinse the surface well with high pressure spray.
22. Take before and after pictures of the water tank and prepare the after service report.
23. Make a detailed survey/inspection of the water tank and add the comments in the after service reports.
24. Discuss with the site engineer/supervisor regarding the completion of the cleaning and condition of the water tank and take necessary approval/signatures.

CLOSING ACTIVITIES:

PTW – Permit

Health and Safety

Gaining access and working inside a water tank can be difficult and dangerous. There is only a small access hatch on the top of the tank through which to get in and out. Cleaners should be aware of all the possible dangers inside a confined space.

Always blow fresh air into the tank for a period before allowing a person to enter the tank. The cleaner should wear protective clothing, including gloves, boots, hat and glasses.

Make sure someone remains outside, next to the access hatch all the time while someone is working inside in case there is an accident. Effective use of gas masks and portable ventilators is an advantage to minimize the risk involved.

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RISK ASSESSMENT

Hazard	Potential Hazard	Initial Assessment			Control Measures (List the controls to manage each of the hazards)	Re-Assessment		
		L (1-5)	S (1-5)	Risk Rate		L	S	Residual Risk
Confined space	Serious physical damage to employees	4	4	16	Follow permit to work, verify acceptable entry condition. Portable exhaust for forced ventilation of confined space. Use multi-gas detectors to measure oxygen, CO, LEL & H2S levels. Provision of retrieval/rescue equipment. Conduct safety briefing to identify the risk involved with each site. Using radio for continuous communication.	2	4	8
Electrical lights	Electrical shock & fire	4	4	16	Battery operated LED lights and head torches. Use of flame proof, waterproof & shatter proof electrical equipment. Preventive maintenance of all electrical equipments.	2	4	8
Pressure Washer	Bodily injury	4	4	16	Keep the area clear of non-essential, eye and hand protection to be worn always. TBT on the safe use of the machines. Maintain good housekeeping.	1	4	4
Manual Handling	Physical Injury - Head, feet & body.	3	4	12	Clear tank entrance. Use ropes & hooks to secure objects & equipment. Hard hat and safety shoes to minimize the impact. (All PPE's)	1	4	4
Working at heights	Physical damage	4	4	12	Use full PPE's. Use of long handled tools wherever appropriate. Full body harness and lifeline. Safety briefing to be conducted before starting the job. Take utmost precaution & controlled operations.	1	4	4

Chemical hazard	Burns and skin irritation	3	4	12	All PPE's such as Face mask, gloves and eye protection. Dilute the chemical concentration with water before starting the cleaning works. Carry eye wash if required.	1	4	4
Slips/Falls.	Head & body injury	3	4	12	Provision of anti-slip boots. Thorough understanding of tank layout, provision of adequate lighting and proper training. Warning signs and isolate area.	1	4	4
Limited access & egress	Head & body injury	3	4	12	Provision of retrieval/rescue equipment. Conduct safety briefing to identify the risk involved. Use radio for continuous communication.	1	4	4
Hard/sharp objects.	Head & body injury	3	4	12	Barricade and isolate all with warning signs. Use all PPE's. Identify the areas and use padding or wrapping to sharp edges.	1	4	4
Waste disposal	Pollution	3	4	12	Use of environmental friendly bio degradable disinfectant to clean. Prevent contamination of sewage line, collect waste and debris for safe disposal. All empty chemical cans to be taken off site for safe disposal as per local regulations.	1	4	4

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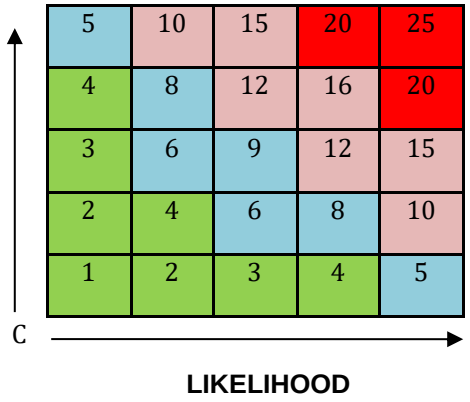
LIKELIHOOD

1. Very Unlikely – There's 1 in a million chance of the hazardous event happening.
2. Unlikely - There's 1 in 100,000 chance of the hazardous event happening.
3. Fairly Likely - There's 1 in 10,000 chance of the hazardous event happening.
4. Likely - There's 1 in 1000 chance of the hazardous event happening.
5. Very Likely - There's 1 in 100 chance of the hazardous event happening.

CONSEQUENCE

1.. Insignificant – No injury
2. Minor – Minor injuries needing First Aid
3. Moderate – Up to 3 days absent
4. Major – More than 3 days absent
5. Catastrophic - Death



17 – 25	UNACCEPTABLE Stop activity and make immediate improvements
10 – 16	TOLERABLE Look to improve within specified timescale
5 – 09	ADEQUATE Improve at next review
1 – 4	ACCEPTABLE No further action. Ensure controls are maintained

	Name	Designation	Signature	Date	Remarks
Prepared By;		**Safety Supervisor**		**28-10-2019**	
Reviewed By:		**HSE**		**28-10-2019**	