



FRP WET WELL & PUMP STATION INSTALLATION INSTRUCTIONS



CONTENTS

1. Introduction	3
2. Safety	3
3. Preparation for Installation	4
4. Unloading of Wet Well	5
5. Installation	6
6. Invert levels	7
7. Wet Well and Valve Pit	7
8. Lifting Guidelines	8
9. Positioning the Station	9
10. Concrete Ballast and Backfill	10
11. Backfill Material	11
12. Roof Slab	12



TANK SOLUTIONS PTY LTD

ABN: 59 142 807 949

+61 2 4964 8270

513 Tomago Road,
TOMAGO NSW 2322

PO Box 102,
RAYMOND TERRACE NSW 2324

sales@tanksolutions.com.au

tanksolutions.com.au
mullaly.com.au

VERSION CONTROL

DATE	DOCUMENT NAME	JOB NUMBER	VERSION
21JAN22	TS_Mullaly_Wet Well & Pump Station Installation Guidelines_V1	TRIL018	V1

1. INTRODUCTION

- 1.1 It is the responsibility of the owner, installer and operator to follow all requirements contained in these instructions and to comply with all federal, state and local safety regulations that may apply to Tank Solutions wet well installations and operations.
- 1.2 No instructions or procedures presented in this document should be interpreted so as to put at risk any person's health or safety, or to harm any property or the environment.
- 1.3 This document is a general guide to installing a Mullaly FRP pump station. Please refer to the specific summary sheet supplied for instructions on this specific pump station.

2. SAFETY

- 2.1 Working in and around excavations is dangerous. The Occupational Safety and Health Administration (OSHA) has specific requirements that must be followed. Prior to beginning work at the site, the installer should obtain a copy of OSHA's standard.
- 2.2 Careless activity or reckless operation of equipment can cause death, serious injury or property damage.
- 2.3 It is important to follow the procedures and instructions in this document in order to safely and properly install a Tank Solutions wet well. Failure to follow these instructions will void Tank Solutions' obligations under the limited warranty and may cause product failure, serious personal injury or property damage.
- 2.4 The Tank Solutions limited warranty applies only to a wet well installed according to these instructions. Since Tank Solutions does not control the parameters of any installation, Tank Solutions' sole responsibility in any installation is that presented in the limited warranty.
- 2.5 Comply with all applicable federal, state and local construction, health, safety and environmental codes, and industry standard practices.
- 2.6 Federal, state and local codes and regulations always take precedence over a Tank Solutions requirement.
- 2.7 Tank Solutions must authorize – in writing and prior to wet well installation – any variation to, or deviation from, these instructions.
- 2.8 All correspondence regarding variations must be retained for any warranty claim to be valid.
- 2.9 If you have questions or encounter situations not covered in these instructions, contact technical support at Tank Solutions, 02 4964 8270.

3. PREPARATION FOR INSTALLATION

- 3.1 Although Tank Solutions wet wells are rugged, the wet well owner and/or the wet well owner's representative must take care so that the wet well is not dropped or damaged during delivery, unloading and handling on the jobsite.
- 3.2 Before unloading the wet well from the truck, the wet well owner and/or the wet well owner's representative must make sure that all tools or other items that may damage the wet well during unloading are removed from the trailer bed.
- 3.3 When unloading the wet well from the truck, the wet well owner and/or the wet well owner's representative must make sure that the wet well is secured in such a way that it does not roll off the truck.

WARNING: Do not allow driver to release straps securing the wet well to the truck until lifting equipment (such as a crane) is secured to the wet well's lifting lug(s). Failure to do so could result in death or serious injury.

WARNING: Always chock the wet well. The wet well is heavy and has a large surface area. The wet well will roll on sloped surfaces and could be blown about by the wind. Movement of the wet well could result in death or serious injury.

- 3.4 Before the wet well is unloaded or relocated on the jobsite, the wet well owner and/or the wet well owner's representative must complete the following steps:
- 3.5 Visually inspect the entire exterior surface of the wet well to make sure that no shipping or handling damage has occurred. Look particularly for holes, cracks or deep scrapes.
- 3.6 If damage is detected, do not attempt repairs. Contact Tank Solutions immediately on (02) 4964 8270.
- 3.7 Sign the shipping papers accepting the wet well as delivered.
- 3.8 Be sure that all equipment used to lift the wet well is rated to handle the load.
- 3.9 Select a solid, level area to place the wet well, and clear that area of all rocks, trash and debris.

4. UNLOADING OF WET WELL

When hoisting the wet well, follow these instructions:

- 4.1 When the wet well is not rotated (the wet well is upright), use all lifting lug(s) to unload and install the wet well.
- 4.2 Some wet wells are rotated on the truck for shipping purposes. These wet wells have extra lifting lug(s) to aid in the loading/ unloading process.
- 4.3 To unload these wet wells, use the lifting lugs that are situated on top of the wet well in its rotated position. To install the wet well, carefully rotate the wet well to its upright position and then use all lifting lugs situated on top of the wet well in its upright position.
- 4.4 Do not wrap chain or cable around the wet well – only pliable straps or soft slings are to be used.
- 4.5 Use guy ropes to guide the wet well when needed.
- 4.6 Do not roll the wet well to move it.
- 4.7 Whenever a wet well is temporarily placed aboveground at the site, chock it in place to prevent rolling. Tie the wet well down if high winds are expected.
- 4.8. Whenever a wet well is temporarily placed above the ground in a situation in which there could be freezing temperatures, always take extra care so that water does not accumulate in a way that could result in damage to the wet well.
- 4.9 Excavate a hole large enough to accommodate the wet well, underground piping, backfill material, and adequate working space.

5. INSTALLATION

5.0.1. EXCAVATION PARAMETERS

Refer to the attached project summary sheet for excavation details for the wet well/pump station and valve pit.

5.0.2. STABLE SOIL CONDITIONS

Wet wells which are to be installed in stable soils ($\geq 36\text{kPa/m}^2$) or where shoring is not required to maintain a vertical wall from top to bottom of excavation, require a minimum of 300mm of backfill be placed around the entire periphery of the wet well.

5.0.3. UNSTABLE SOIL CONDITIONS

If the soil has less than 36 kPa/m^2 cohesion as calculated from an unconfined compression test, or soils having an ultimate load bearing capacity of less than 168 kPa/m^2 , or where soil will not maintain a vertical wall, the excavation must allow a minimum of half of the diameter of the wet well diameter around the entire periphery of the wet well.

5.0.4. TRAFFICABLE SURFACE

Wet wells subjected to traffic loads must use approved backfill at least 600mm around the entire periphery of the wet well. The compaction requirements for the bedding material for the traffic slab are determined by the party who designs the traffic slab.

5.1. DRY-HOLE INSTALLATION

5.1.1. Prepare a smooth, level bed, 300 mm thick, of approved backfill material.

5.1.2 Place the wet well onto the bed.

5.2. WET-HOLE INSTALLATION

5.2.1 Before performing Point 5.1.1. of the dry-hole installation, pump the water from the hole and continue pumping to maintain minimum water level during wet well installation.

5.2.2 During Point 5.1.2. of the dry-hole installation, when setting the wet well, partially ballast the wet well until it settles firmly on the prepared bed. The ballast level in the wet well must never exceed the water level in the hole by more than 300 mm until the backfill reaches the top of the wet well.

5.3. Locate centrelines of Wet Well, Valve Pit, all existing & proposed services.

5.4. Check and note overall size of Wet Well and Valve Pit including hatch covers.

6. INVERT LEVELS

- 6.1. Check the invert level of the inlet with the depth of the incoming gravity main, if known or in place. Adjust excavation depth, if necessary, so Wet Well Inlet matches incoming gravity main RL.

NOTE: Sump RL as per drawings is the internal RL. The excavation level has to allow for the thickness of the FRP base. Measure invert level of inlet connection to underside of wet well externally.

- 6.2. Check the depth of the Valve Pit excavation ensuring the level of the rising main outlets of the Wet Well match the inlets on the Valve Pit. Adjust as required.

7. WET WELL AND VALVE PIT

- 7.1. Inspect the base of the excavations and ensure the base strata will provide adequate foundation bearing capacity. Should the station be founded in poor quality material, then additional works will be required to the foundation strata.
- 7.2. Place compact and grade bedding material to obtain a firm level base. The bedding material should be either 10mm blue metal, metal dust or sand. Blue metal or metal dust will provide a superior base to sand.

8. LIFTING GUIDELINES

The lifting procedure is the responsibility of the crane company or rigger. Tank Solutions are not qualified crane operators, or riggers, therefore, the below are guidelines only to consider when developing the overall lifting plan and procedure for this project.

- We recommend a spreader bar is used at the width of the lugs across the wet well with 4 lifting points.
- We recommend using equalizing sheaves each end of the spreader with a suitably rated sling or equivalent. This will help to equalise the load across all four lugs and ensure the load is shared throughout the rotation and placement of the wet well.
- We recommend that the base of the wet well is kept on the ground during the lift. This will assist in supporting the load until the vertical position is reached.
- We recommend that a rubber mat is placed onto compacted ground underneath the location where the base will be placed and lifted from to help protect the base of the tank.
- The wet well should be lifted from horizontal to vertical with the boom moving across to ensure the base does not drag underneath to the vertical and stands straight upright.
- Care needs to be taken to ensure the lift is done in a slow and controlled manner. In tailing operations like this, the payload may have a tendency to kick out as it is being stood up.
- A typical lifting arrangement is shown below on how the pump station is to be lifted from horizontal to vertical. Note this includes the use of a spreader bar and sheaves in a 4-point lift. Smaller stations will only require 3 lifting points and no spreader bar.

NOTE: The Mullaly Pump Stations and wet well are now supplied with a metal swivel lug arrangement as shown below. These lugs are designed to rotate and turn the load therefore, the lifting point can engage in any position.

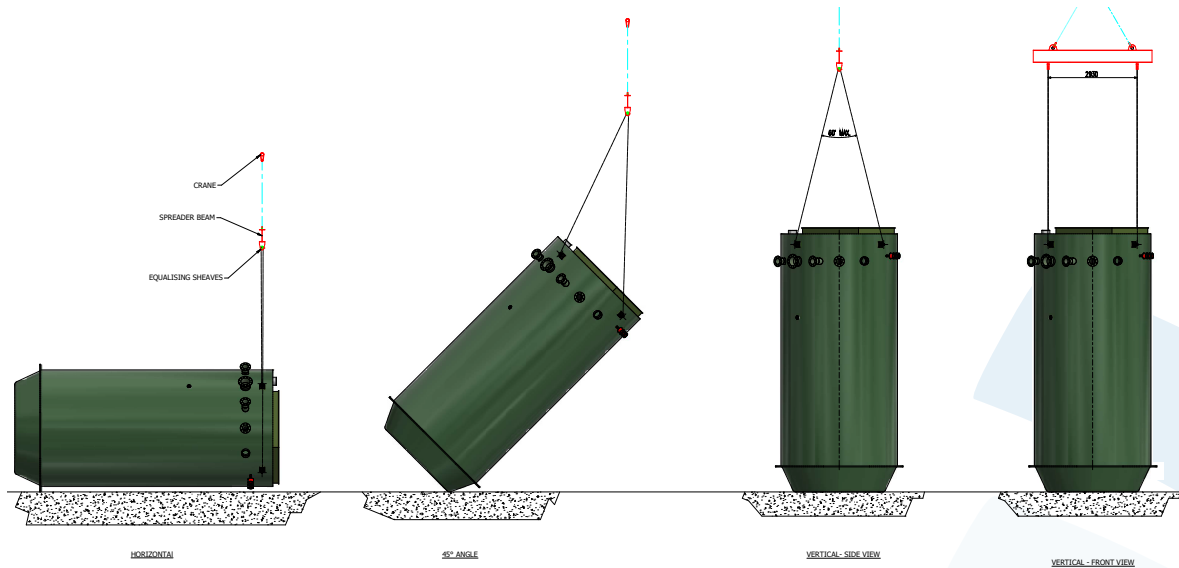
- RUD metal swivel lifting lugs have been built onto the sides of the pits to assist with installation, these lugs have been located to allow the pit to hang plumb from the crane, but may require some adjustment to the sling lengths to ensure this is correct. The number of lugs will depend on the size of the pump station. Please refer to project drawings.



New RUD metal swivel lugs
now being used on Mullaly
Pump Stations

NOTE: Sling top angles must not exceed 60 degrees.

9. POSITIONING THE STATION



- Position station in excavation. Check levels, centre lines and orientation of gravity lines, rising mains and conduits as required matching final pipework orientations.
- Check guide rails to be sure station is plumb in both directions.
- Bracing the bottom and top of the station may be required to retain the wet well location, fill wet well with water to bottom of the inlet, recheck location and plumb. Adjust as necessary. Please note the bracing is just to retain the location to keep in alignment with pipework orientations whilst being filled with water.
- Make connections to inlet gravity line(s) and other lines located below the base of the Valve Pit excavation. Should these not be in place, then make provision so connections can be made at a later date. This can be done by either extending the pipe work beyond the line of the ballast concrete or by providing adequate block outs.

10. CONCRETE BALLAST AND BACKFILL

- 10.1. Backfill around the base of the station up to the level of the FRP hold down flange.
- 10.2. Specific project details of the amount of concrete required for the project is summarised in the attached project summary sheet.

NOTE: It may be necessary to ballast the wet well with water, in order to prevent the wet well moving whilst pouring the concrete.

NOTE: Concrete must fill all voids and gaps around the entire periphery of the wet well.

- 10.3. Backfilling Around the Wet well Periphery

- 10.4. Once the ballast concrete has cured, bring the backfill up in the excavation to the required elevations.

NOTE: Add backfill in maximum 900mm lifts evenly around the periphery of the wet well in order to avoid uneven backfill loads

NOTE: Ensure the dry rodded density of backfill material is not less than 1500kg/m³

- 10.5. Tank Solutions recommends the use of a geotextile fabric to help separate the select backfill from the in-situ soil.

- 10.6. For further information concerning geotextile specifications and installation procedures, consult the geotextile supplier's installation guidelines or instructions.

- 10.7. Polyethylene film is not considered an effective geotextile material. It may tear or degrade while in service.

NOTE: Add backfill in maximum 900mm lifts evenly around the periphery of the wet well in order to avoid uneven backfill loads.

NOTE: Ensure the dry rodded density of backfill material is not less than 1500kg/m³.

11. BACKFILL MATERIAL

Tank Solutions wet wells must be installed using either rounded stone (pea gravel) or crushed stone which conform to the attached Backfill Guidelines, or coarse-grained soils (gravel or sand).

NOTE: Where native or non-conforming backfill is to be used this should be stipulated when pricing is requested. The type of backfill used will change the design factors applied to determine the thickness of the wet well FRP shell.

- 11.1 When using rounded stone, the material is to be a mix of rounded particles, sizes between 4.75 and 19 mm. The rounded stone must conform to the specifications of AS2758.1:1986.
- 11.2 When using crushed stone, the material is to be a mix of angular particles, sizes between 4.75 and 13 mm. The crushed stone must conform to the specifications of AS2758.1:1986.
- 11.3 When using rounded or crushed stone, the dry rodded density shall not be less than 1500 kg/m³.
- 11.4 When using rounded or crushed stone, the backfill shall not have more than 3% passing through a No 8 sieve (2.36 mm).
- 11.5 Where coarse grained soils containing more than 12% fines are used, moderate compaction is required. Moderate compaction is defined as an intermediate level of compaction, with an in-place density of $\geq 85\%$ and $<95\%$ standard compaction, or $<70\%$ modified compaction.
- 11.6 Where coarse grained soils containing less than 12% fines are used, slight compaction is required. Slight compaction is where some compactive effort is made and has an in-place density of $<85\%$ standard compaction, or $<40\%$ modified compaction.

12. ROOF SLAB

12.1 Details of the concrete roof slab dimensions are found in the attached project specific summary sheet.

12.2 NON TRAFFICABLE AREA'S

For non-trafficable area's the top slab must be larger than the diameter of the wet well by a minimum of 400 mm in all directions. Slab thickness shall be no more than 200 mm thick

12.3 TRAFFICABLE AREA'S (H-20 and HS-20 Loads)

12.3.1. All Tank Solutions Pump stations must be isolated from traffic loads. Isolating the wet well from traffic can be accomplished in the following ways:

- Provide a minimum 75 mm clearance between any loadbearing item (for example, the concrete pad/street-box frame) and the wet well top.
- Provide a minimum of 450 mm of backfill plus 150 mm of reinforced concrete or 220 mm asphalt, when measured from the top of the wet well to finished grade.
- Make sure that no heavy objects are allowed to distort the wet well top after final assembly. This includes the street box and concrete pad. No weight should be transferred from the wet well access opening to the main body of the wet well. Failure to do so may result in property damage.

12.4. Maintain good drainage of water away from the access opening of the wet well at all times.

NOTES

- Attached is an installation checklist. It is recommended this be completed as part of the installation works, with a copy being returned to Tank Solutions.
- Concrete ballast needs to be placed around the Wet Well above the base flange to counter the hydrostatic forces on the station. Refer to ballast calculation sheet attached.
- The Wet Well is designed to withstand the ground pressures imposed on the units. The concrete placed around the pits is purely for ballast purposes.
- The hatch covers for the Wet Well and Valve Pit are two-part lockable aluminium checker plate units with safety grills located beneath. They are designed to be latched at 90° and are also designed for pedestrian traffic only. Plant and vehicles should not be driven on these covers.
- Where Class D hatch covers are specified for Wet Well and Valve Pit access, cast iron covers will be supplied with FRP safety grill in the access neck. They are designed for vehicular traffic. Plant and vehicles can be driven on these covers.

NOTE: The installation of these covers should be done in a manner that ensures that roof slab and cover loads are not transferred to the pump station.

These installation instructions are standard recommendations. The installer should review these and give consideration to the impact of site conditions on these. Additional works maybe required as a result of this review.

Further installation information can be obtained by contracting our Head Office during office hours on +61 2 4964 8270



NEW SOUTH WALES

P: +61 2 4964 8270
513 Tomago Road,
Tomago, NSW, 2322

WESTERN AUSTRALIA

P: +61 8 9434 1707
7 Kalmia Road,
Bibra Lake, WA, 6163

tanksolutions.com.au

mullaly.com.au