



SANGWON ONE TANK

GRP Water Tank

Excellent Long Term Durability / Free Capacity Design & Customized Shape
Easy to Assembly Water Tank / Excellent Water Tightness

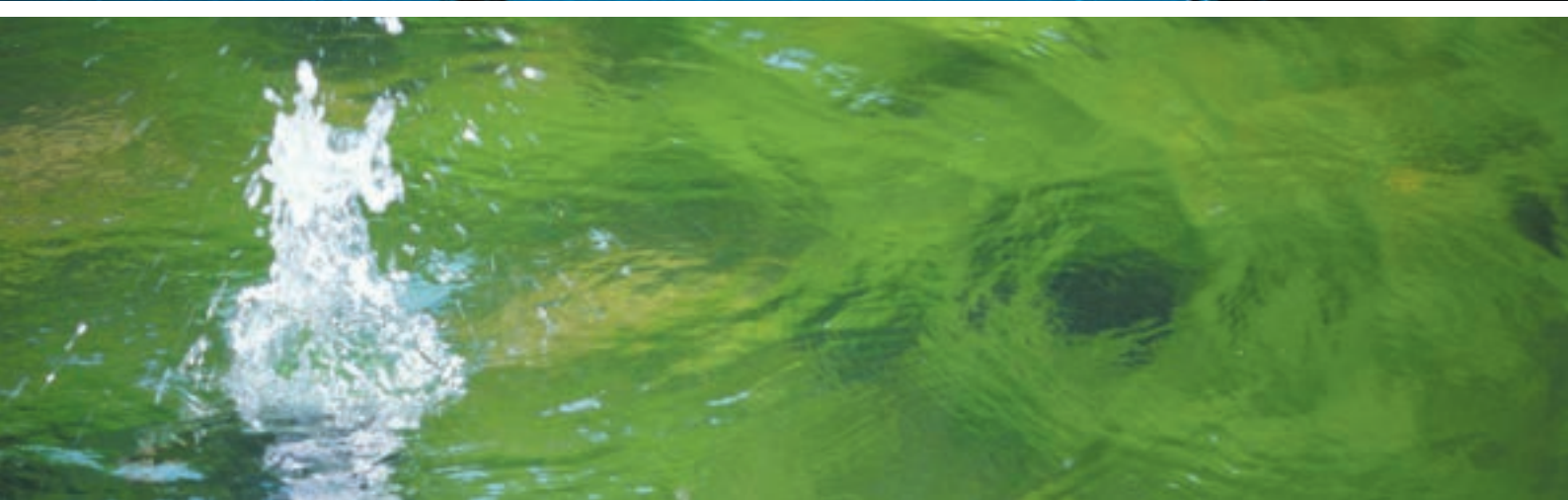


SANGWON ENG CO., LTD.

A long-exposure photograph of a night sky showing concentric circular star trails in shades of blue and white. The trails are centered in the upper half of the frame. Dark silhouettes of trees are visible at the bottom left and right edges.

SANGWON ENG CO., LTD.

HOT PRESS MOULDED
SECTIONAL GRP WATER TANK



CONTENTS

SANGWON ENG CO., LTD.

COMPANY PROFILE	04 / 05
SANGWON ONE TANK	06
CERTIFICATES	07
FEATURES & BENEFITS	08 / 09
INTERNALLY REINFORCED WATER TANK	10
EXTERNALLY REINFORCED WATER TANK	11
EXCELLENT HEAT INSULATION & HIGH QUALITY WATER TANK SYSTEM	12
GRP WATER TANK PANEL PHYSICAL PROPERTIES	13
GRP WATER TANK PANEL TYPE & SIZE	14
PARTITION TYPE GRP WATER TANK	15
INSTALLATION STANDARD (FOUNDATION PAD & SPACE)	16
MAINTERNANCE, INSPECTION & CLEANING	17
GRP WATER TANK INSTALLATION & CAUTION	18
GRP WATER TANK INSTALLATION PROCESS	19

SANGWON GRP Water Tank, ONE TANK

Company Profile

**Excellent Long Term durability / Free capacity design and customized shape
Easy to assembly water tank / Excellent water tightness**

Our company specializes in the development and production of GRP Water Tanks. Located in Gimhae, our large-scale plant and research center are dedicated to on going development and production to lead the industry. Our advanced technology has received ISO, WRAS(UK), BSEN(UK), PSB(SINGAPORE) certification and is garnering world acclaim.

In addition, with a corporate ideology rooted in placing our customers first, we base our management and product development upon this foundation of trust, contributing to technological innovation, quality improvement, and added value enhancement.



Company Profile

In order to carry out such customer-oriented management, we constantly keep in mind the priorities of stringent quality management and environmental protection. In following, we adopted ISO product quality and environmental management standards from the very beginning and our efforts to grow as an environmental friendly company along with our customers are never ending.

We ask for your continuing interest and support. Thank you.

SANGWON, ONE TANK

SANGWON, ONE TANK

Excellent in Clean & Hygienic and, Non-leakage.
ONE TANK for Easy to Design and Installation.

ONE TANK always keep clean water.
ONE TANK is designed to satisfy the basic requirements by using
GRP (Glassfiber Reinforced Plastic).

Patent, New Device Patent, Registration of design

Patent (lagging Water Tank)
New Device Patent (Water Gauge)
New Device Patent (Insulation Panel)



Certificates For GRP Water Tank

GRP water tank Certificates and test reports



ISO



WRAS Certificate (U.K.)



PSB Test Certificate (Singapore)



BSEN (U.K.)

Features & Benefits

C Features & Benefits

● Free capacity design and customized shape

ONE TANK is suitable for large-sized water tank as its structure utilizes horizontal and vertical spaces at the maximum through the use of various size panels.

ONE TANK can be made in square, rectangular or any customized shape through the use of various size panels.

● No Corrosion

ONE TANK has adopted panels that completely block the direct sunlight to avoid the growth of algae and other micro-organisms. And by assembling water tanks with anticorrosive accessories, it can keep water clean.

● Easy to assembly water tank and transportation.

- ONE TANK can be easily assembled by installer.
- ONET TANK makes construction time shorter.
- Standardization panels make easier to transfer.

● Excellent Water Tightness.

The sealant materials are above 95% of thickness restoration in the early stage by compressing sealant.

● Excellent Intensity & Durability

GRP Panels are molded under condition of high temperature and pressure to maintain the best endurance.

Since using STS materials for inside structure and plated steel for outside, it shows excellent performance against corrosion.

● Excellent Heat insulation performance with insulated panels.

ONE TANK Heat insulated panels with options of 25mm and 40mm insulation thickness are suitable for extreme weather conditions.



Features & Benefits

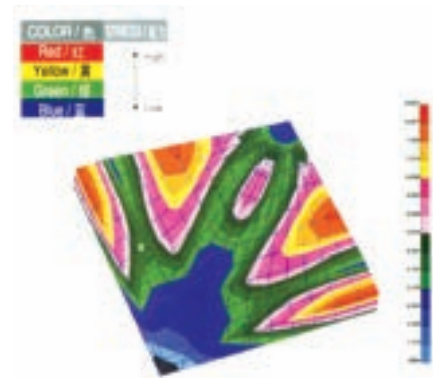
● Best Watertight - Sealing Tape / Bottom Drain System

- Especially developed sealing tape maintains perfect non-leakage of the Water Tank.
- The dome shaped bottom panel with a concave drain panel facilitates complete and quick drainage



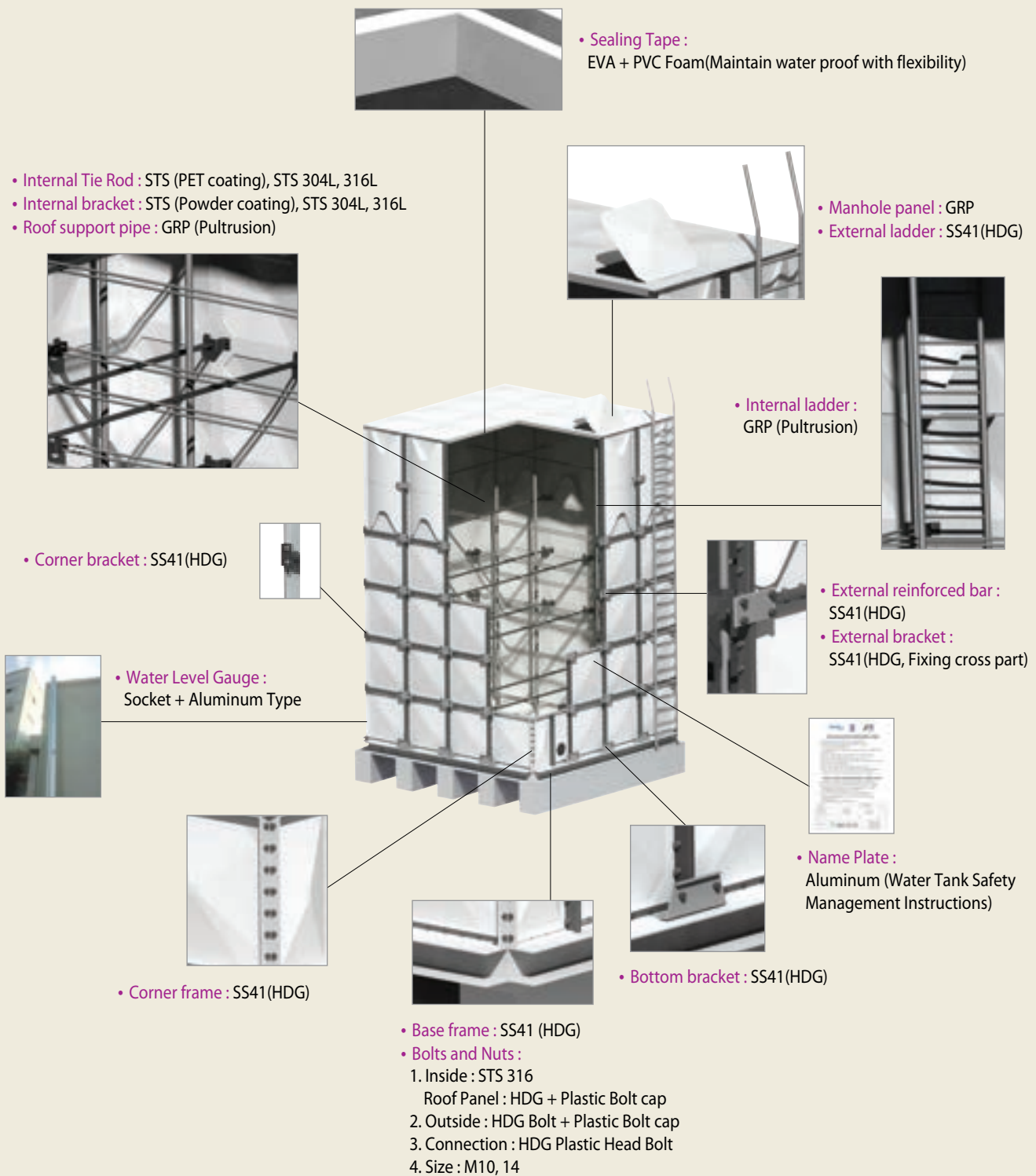
● System design (FEM)

Safe and robust panel construction is designed considering the stress concentration on the panel when load is applied by FEM. And we always satisfy all safety requirements such as strength, durability and stability with rigid design regulation and quality control.

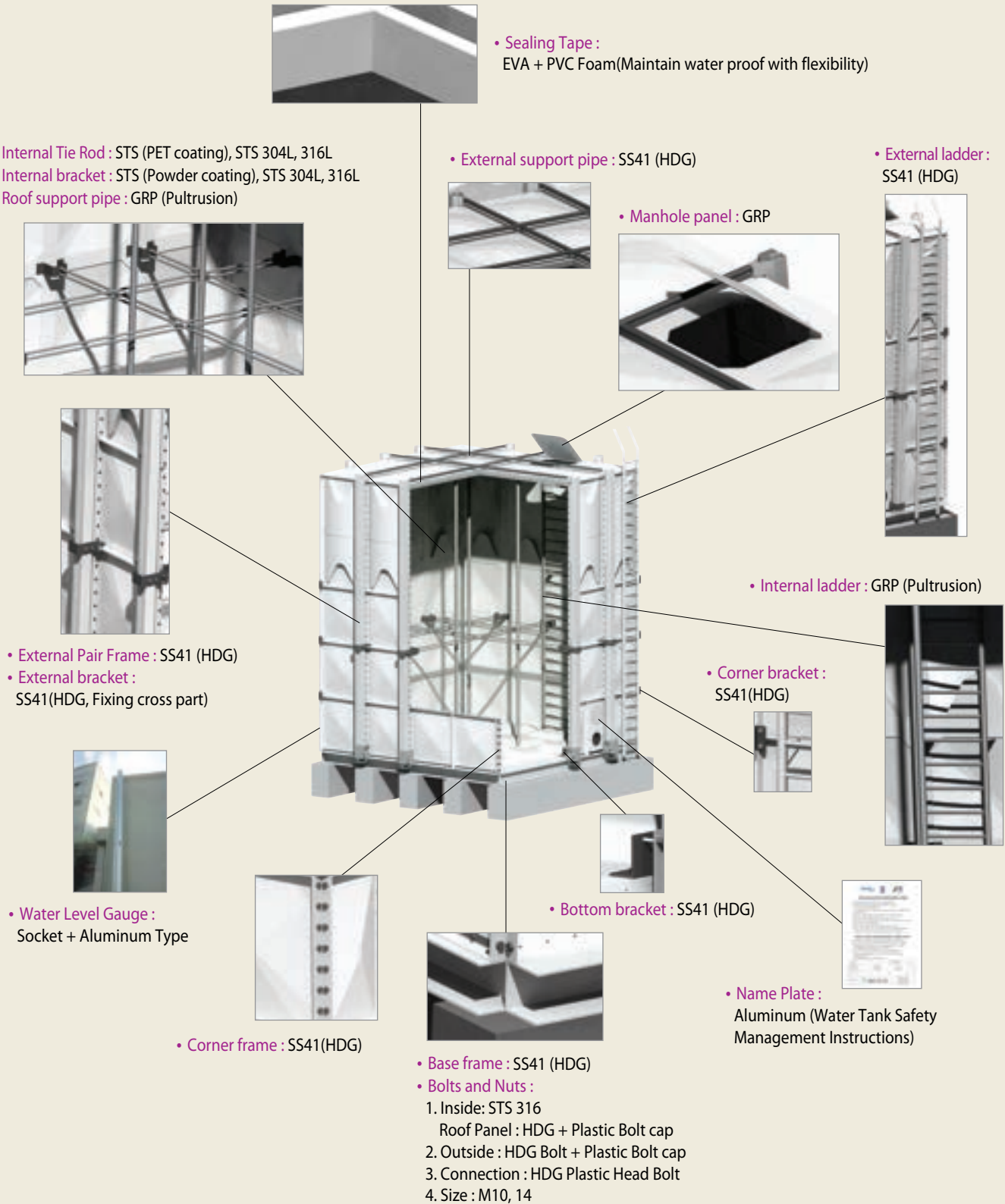


Internally Reinforced Water Tank

- It is possible that various capacity's design and flexible space should be used by GRP panels standardized
- Excellent watertightness, hygienic conditions and non-leakage applied internally reinforced stay(Stainless)



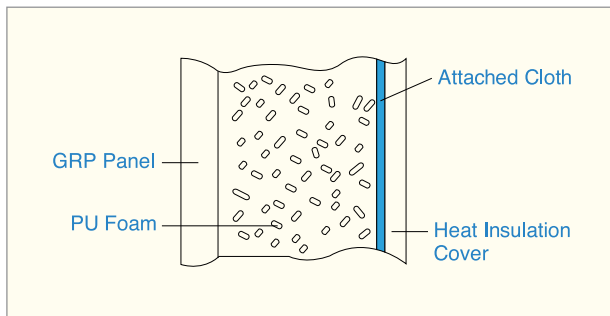
Externally Reinforced Water Tank



Excellent Heat Insulation & High Quality Water Tank System

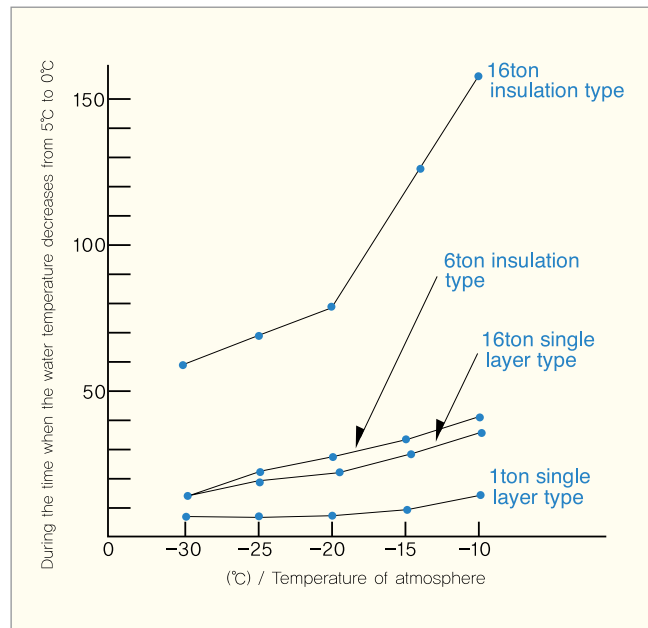
C Outstanding in Heat Insulation

The heat insulation panel with 4 layer structure improves heat insulation effect. Protects water condensation on the outside of the tank and minimizes temperature variation of the stored water.



During the time when the water temperature decreases from 5° to 0°

Capacity	Classification	Temperature of Atmosphere		
		-10℃	-20℃	-30℃
16tons	Noninsulated Type	35	20	13.5
	Insulated Type	164	81	58.5
1tons	Noninsulated Type	11	6	4
	Insulated Type	37.5	23	13.5



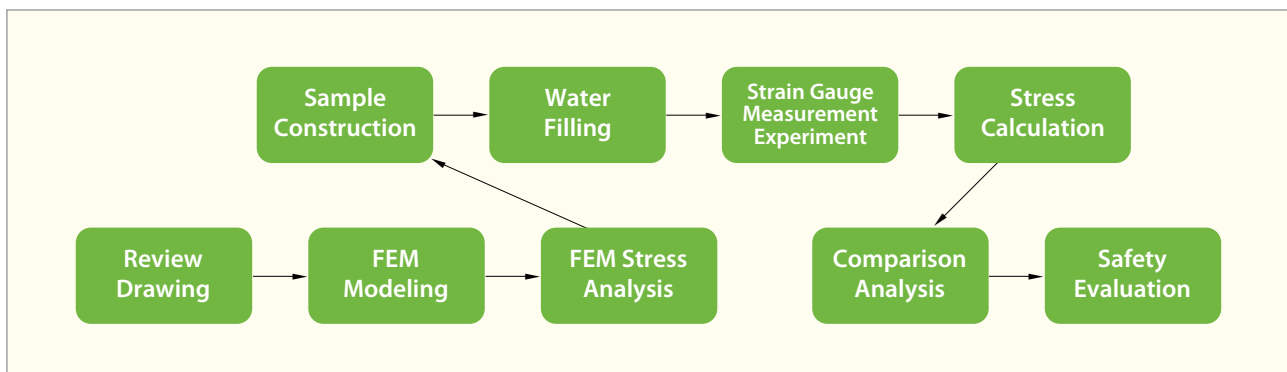
※ Test condition

- Tank is filled with water
- No further water supply, or drainage during the test

C High Quality Water Tank System

We always satisfy all safety requirements such as strength, durability and stability with rigid design regulation and quality control.

● Structure Analysis Flow Chart



The hydrostatic pressure resistance of the panel is measured with a hydrostatic tester to verify that the strength of bottom panel is applicable to permissible design stress. By above procedure, the panel grade applicable to the panel is determined.

GRP Water Tank Panel Physical Properties

Panel Physical Properties

item	Unit	Physical Properties	Test Method
Specific Gravity (23℃ / 23℃)		1.85	KS M 3016:2006(A)
Tensile Strength	MPa	95~105	KS F 4811:2005
Bending Strength	MPa	185~195	KS F 4811:2005
Elastic Modules in Band	GPa	15.8	KS F 4811:2005
Barcol Hardness	-	58	KS F 4811:2005
Compression Strength	MPa	105	KS M 3015:2003
Water Absorption Rate	%	0.03	KS F 4811:2005
Impact Strength (IZOD)	J/m	1,100	KS M 3015:2003
Glass Fiber Content	%	32	KS F 4811:2005
Liquefaction Test (Turbidness)	Degree	Below 0.1	KS F 4811:2005
Liquefaction Test (Chromaticity)	Degree	Below 1	KS F 4811:2005
Thermal Expansion Co - Efficient	1/℃	0.000016	KS M 3015:2003
Thermal Conductivity	W/m.K	0.204	KS L 9016:1995 (Means of the heat flow meter apparatus)
Light Transmittance		0.00%	KS M 4811:2005
Toxicity		NIL	KS M 4811:2005
Micro Biological Growth		NIL	KS M 4811:2005

Design Standards

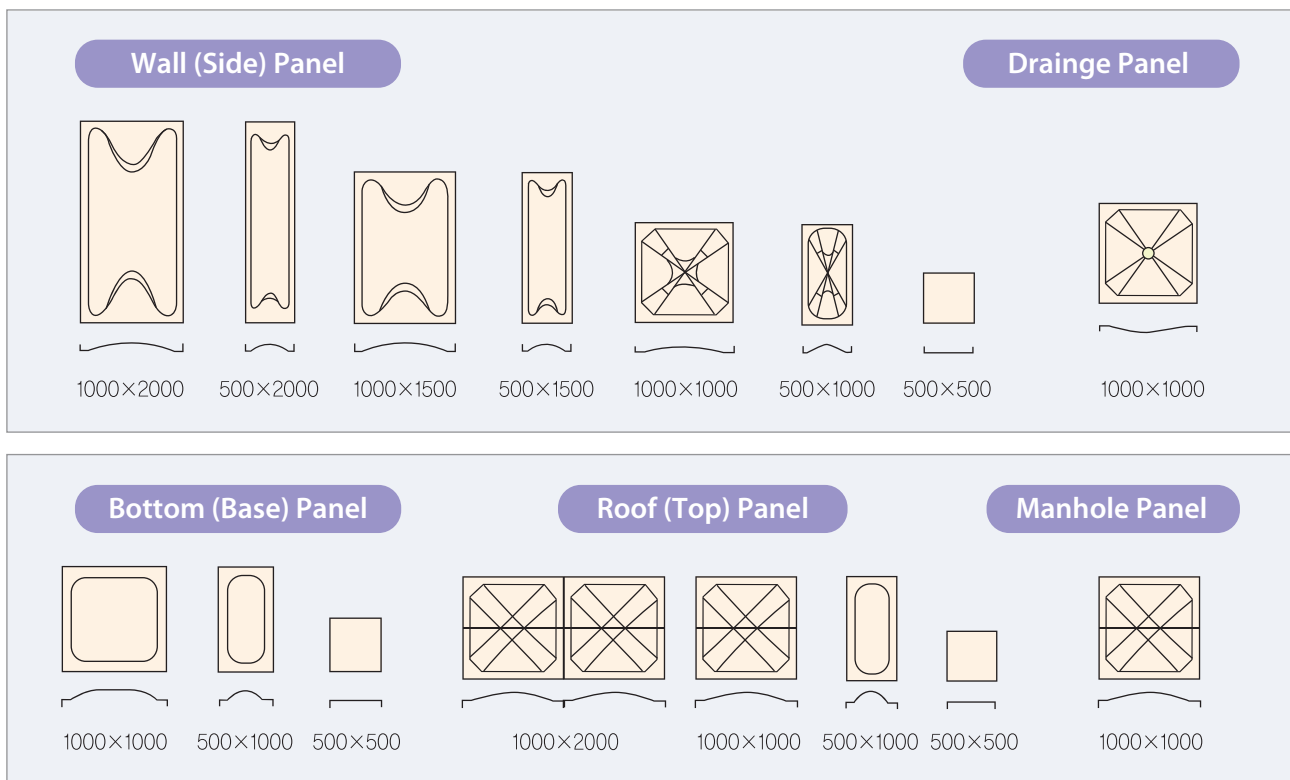
item	Guaranteed Load Condition
Hydrostatic Pressure	Water Level (Height in Meters) X 0.1kgf/cm ² (0.01MPa)
Horizontal Seismic Load	Kh=2/3 (Load on ONE TANK itself)
Vertical Seismic Load	Kv=1/3 (Load on ONE TANK itself)
Wind Force	255kgf/m ² (2.55 X 10 ⁻³ MPa)
Wind Load	385kgf/m ² ·A(3.85X10 ⁻³ MPa·A)
Snow Load	60kgf/m ² (at the base of 30 _{cm} of snow depth)
Component Materials	Vertical Weight 100kgf at a point of 35 _{cm} between the fitting and the supporting pole

GRP Water Tank Panel Type & Size

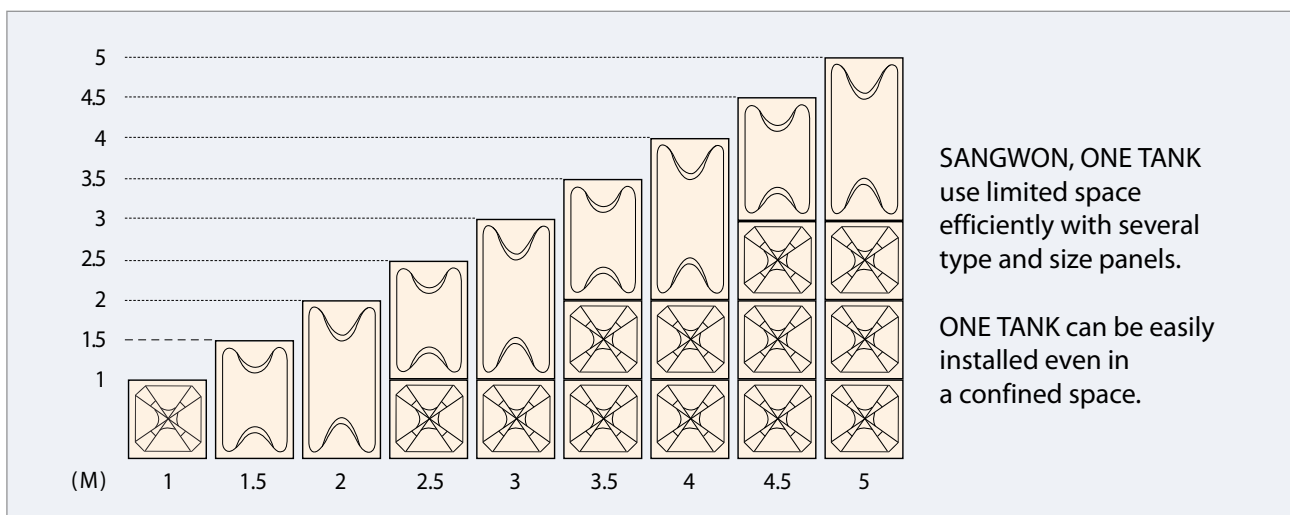
Efficient Space Using with Various Panels

- ONE TANK uses limited space efficiently with various type & size panels.
- ONE TANK can be easily installed even in a confined space because the standardized panels & accessories are merely bolted together.

GRP Panel Type & Size



GRP Panel Composition by Height



Partition Type Water Tank

Partition Type Water Tank

It is possible to eliminate unusable space, and utilize the maximum space, by installing a partition type tank. Economical and effective for maintenance.

● Utilizing maximum capacity

In the basement or other confined areas, it is possible to eliminate unusable space, and utilize the maximum space, by installing a partition type tank.

● Various uses

If partition type tanks are installed, one section can be used for drinking water, and the other section for service water (Ex. fire fighting).

● Easy Maintenance

It is convenient for maintenance, because two tanks can be installed as one unit.

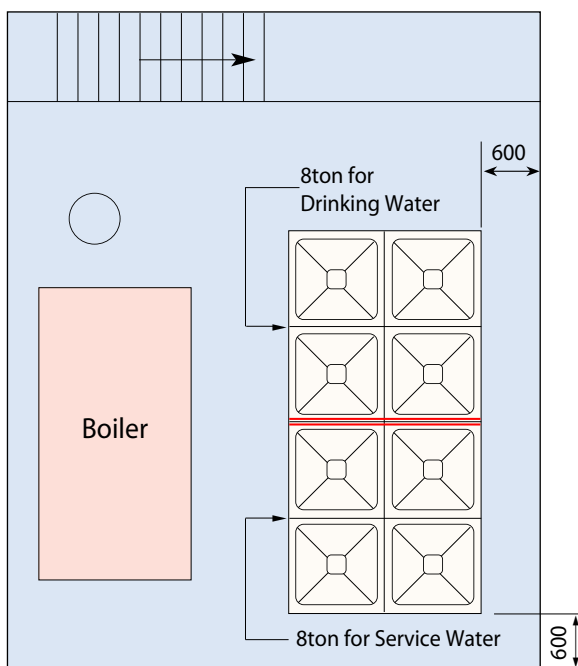
● Cost effectiveness

The cost and installation of 1 partition tank is cheaper than 2 separate tanks.

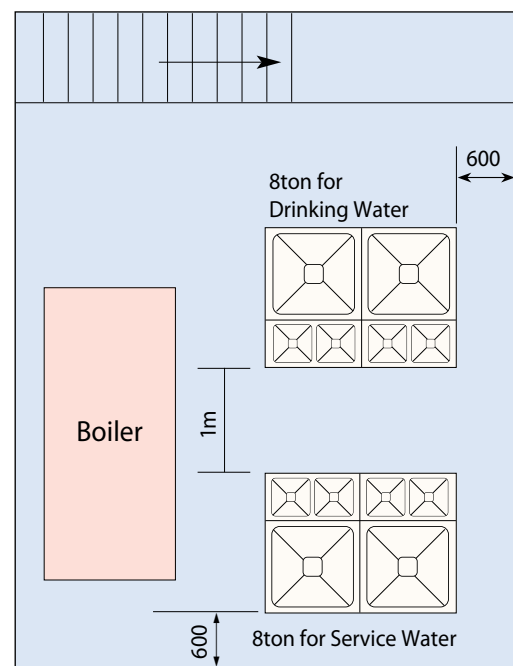
Installation Example of Partition Type Tank

If tanks for two different uses are needed in a confined area or boiler room, a 16 ton partition type tank can be installed to use half for drinking water, and half for service water.

If separate tanks are installed, however, you have to installed two tanks with a maximum of 6 tons, because you need to have 1 meter distance between tanks for maintenance and operating space.



(Partition Type)

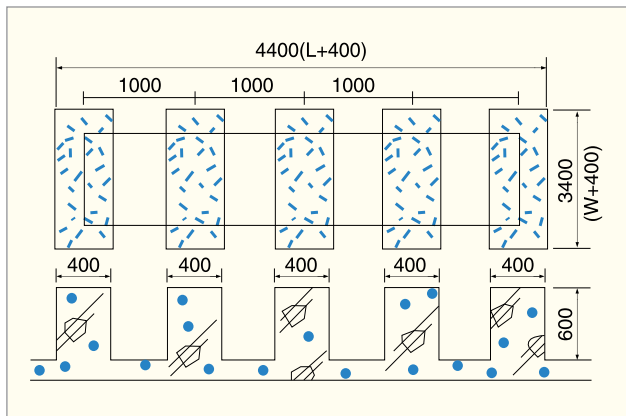


(Without Partition Type)

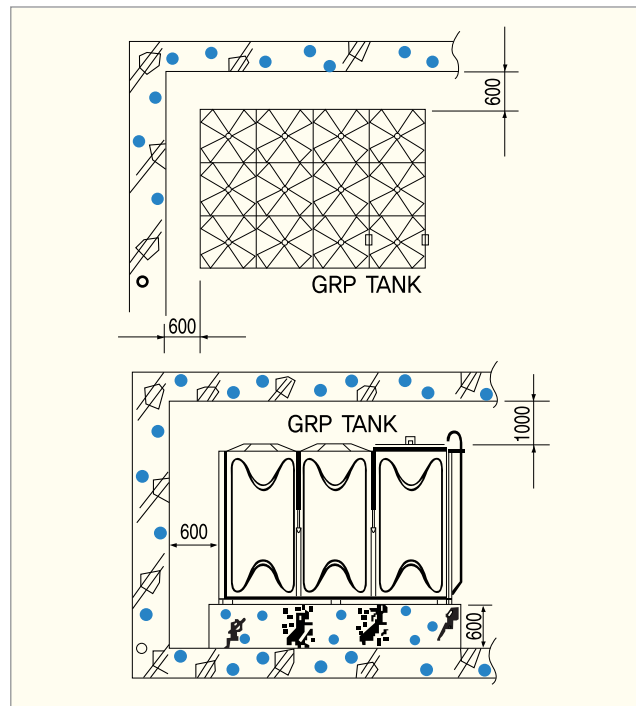
Installation Standard (Foundation Pad & Space)

Standard of Base Concrete PAD Installation and Space

For maintenance of ONE TANK, it needs extra space at least 600mm from wall and 1,000mm from ceiling.



Width	Over 400mm
Height	Over 600mm (Base Frame Include)
Space	less than MAX 1M
Outer Dimension	W, L + 400mm
Horizontal Degree	Less than 1/500



Installation Examples



Maintenance, Inspection & Cleaning

To keep the tank clean and ensure its safe use, please perform the following inspection and maintenance work.

SANGWON, ONE TANKS are designed and manufactured for long-term service.

Maintenance and inspection must be conducted to secure hygienic and long life. To facilitate easy and safe maintenance and inspection, a proper space must be secured around water tanks.

INSPECTION ITEM	INTERVAL	REMARKS
Cleaning inside the tank	Once a year	Use cloth, sponge or other soft material. Never use hard materials, such as wire brush or the surface of the GRP will be scratched.
Looseness of the bolts	Once every six months	Retighten any loose bolts.
Clogging of air - vent and overflow	Once a month	Check the air - vent, overflow and the other parts for clogging. Remove any trapped foreign matters.
Manhole cover	Once a month	Make sure that the manhole cover is completely shut. Always keep the manhole cover locked.
Turbid water	Once a month	Check the inner parts of the tank, the outlet and the other places for turbid water.
Water leakage and deformation of the tank	Once a month	If the tank leaks or deformed immediately contact the local sales representatives.
Internal & external pressure other than hydrostatic pressure.	Once a month	If any pressure other than hydrostatic pressure applied to the tank, immediately return the tank to its normal state.

Whenever earthquake, typhoon, fire, water failure, water reduction, turbid water or other accident occurs, check the tank or call our representative.

If the tank water is not used for long period of time (due to summer vacation of schools, long term holidays, or for some other reason) discharge the stored water before re-use. (Due to constant R&D specifications are not subject to change, please refer to our marketing department for latest update.)



※Important : Keep the 80% Water level of the water tank height all the time

GRP Water Tank Installation & Caution

Installation Extent

● Base Concrete PAD

Customers are requested to make base concrete according to the designed specifications and the strength of the site.
Anchor bolts are to be fixed by our agents.
The required strength of the base concrete must be at least 180kg/cm².

The thickness of mortar on the base concrete must not exceed 20mm.

● The Extent of Installation Work

If the customer designates the size of sockets for plumbing, our agents will install the sockets.

After the sockets are in place, the plumbing and heat insulation must be done by customer.

● Installation Space

It is recommended to leave a space of 600mm in each direction from the tank for maintenance.

Caution

● Transportation

Do not place heavy loads or force on the panels during the transportation. Those parts that are touched with rope or other cargo must be cushioned.

● Pipe Installation

Be careful not to put any heavy weight on the pipes that are connected to the fitting.
Pipe installation must be started from the water tank side and be careful not to put unbalanced weight on the fitting.
Take precautions to avoid fire or other occurrences / accidents while welding.

● Maintenance

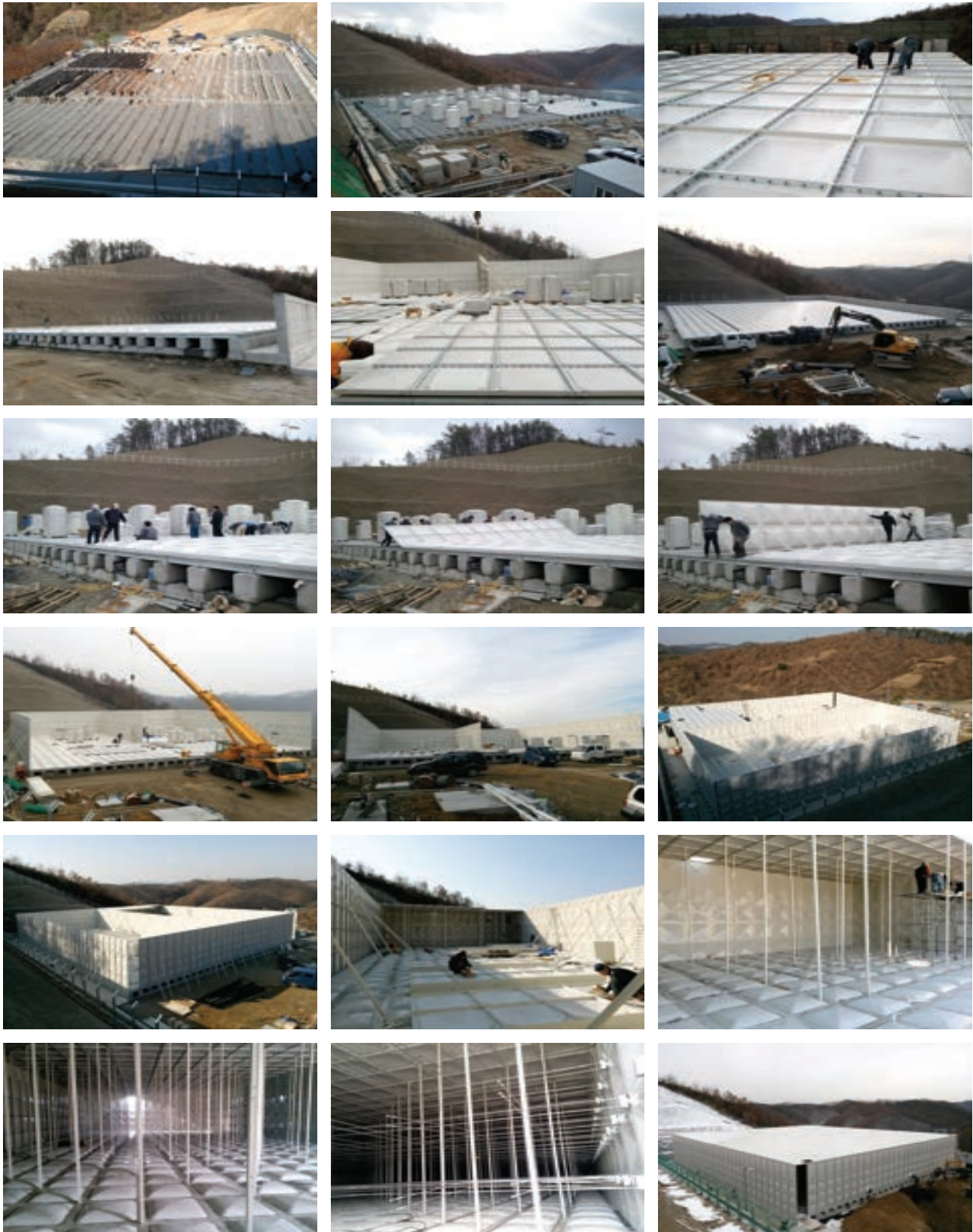
If it is not used for a long time, be sure to drain the water from the tank.

As the tank is a reservoir of water for consumption by people, regular inspection should be done for safety (more than twice a year)



GRP Water Tank Installation Process

GRP Water Tank Installation Process





HOT PRESS MOULDED SECTIONAL
GRP WATER TANK



SANGWON ENG CO., LTD.

E-mail : one-tank@nate.com