WATER PROOFING SYSTEM OF UNDERGROUND TANKS

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Summary of application

STEP 1: Protection of Lean concrete with **Water Guard 491.**

STEP 2: Addition of **Max Flo integra 3 (Powder)** Admixture in raft and retaining wall concrete.

STEP 3: Application of **Ressi Swell Bar Pro 60 (Swellable bar)** in the retaining wall joint.

STEP 4: Repairing of all the concrete defects using **Patch 365 Plus.**

STEP 5: Application of **Water Guard Crysta Coat 101** over the surface of the concrete both internal & external.

STEP 6: Making external and internal chamfers between the raft and the retaining walls using **Patch 365 Plus.**

STEP 7: Plastering of all the areas of the underground tank with the addition of **Ressi SBR 5850** and **Silmix** all over the concrete internally and externally.

STEP 8: Application of **Water Guard 491** on the external and internal plastered surface of the underground tank.

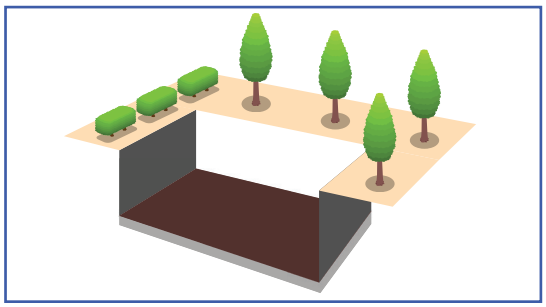
STEP 9: Flood Test.

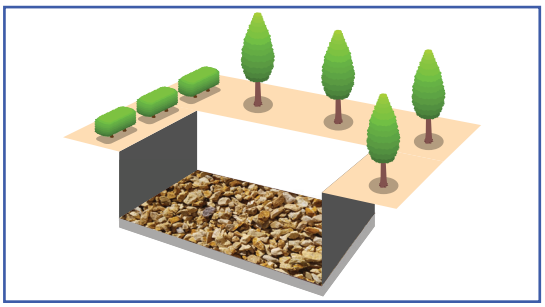
STEP 10: Final inspection and back filling.

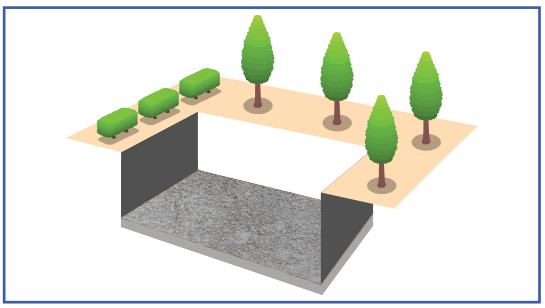
Detailed Description

A concrete water tank or reservoir is a traditional water storage system constructed from strong & long-lasting material—that is, concrete. If maintained properly, concrete can keep the stored water safe from several contaminants, bacteria, & pathogens.

Ressichem has a variety of products that can ensure a long-lasting underground concrete water tank. These products are to be applied in a systematic way to ensure proper long-lasting performance.







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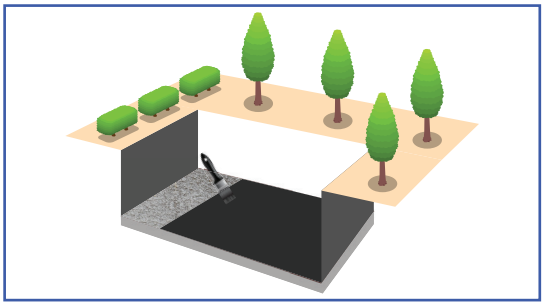
Step 1: Protection of Lean concrete with Water Guard 491.

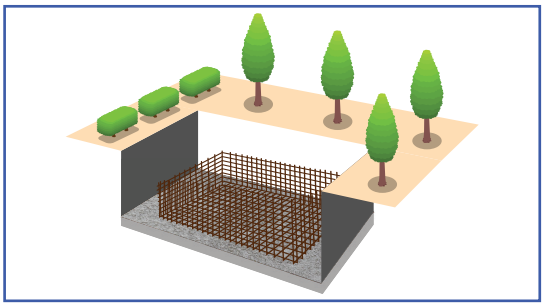
Once the excavation of the ground has been done, it is important to constantly dewater the area and make sure that the area where the underground tank is to be constructed is kept dry. Once the excavation has been completed, stone soling is done after which lean concrete is laid. Once the lean concrete has been properly laid, cured, and dried, it is recommended to apply 2 coats of **Water Guard 491** over the lean concrete surface. The application of **Water Guard 491** is to be done in opposite right-angled directions (if the first coat is applied left to right, the second coat is applied top to bottom). Once the coating of **Water Guard 491** has been dried out, it is recommended to sandwich the coating by applying another layer of lean concrete over the coating of **Water Guard 491**. The steel reinforcement is to be done over the second layer of lean concrete.

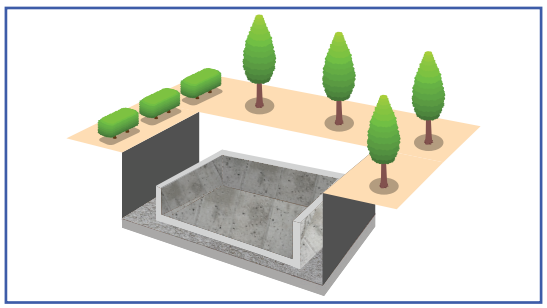
Note: Prior to concreting it is essential to make sure that the water inlet and outlet pipe sleeve provisions are already done within the formwork of the concrete underground tank so that there is no need for hacking or breaking the concrete after it has been casted.



Step 2: Addition of Max Flo integra 3 (Powder) Admixture in raft & retaining wall concrete.

If possible, it is recommended to pour the raft and retaining wall of the concrete in one go. The addition of **Max Flo Integra 3 (Powder)** Admixture is recommended in the concrete. It is recommended to add at least 1 KG of **Max Flo Integra 3 (Powder)** for concrete produced for every 50 KG bag of cement. A proper engineering mix design for concrete can be done for efficient dosing of the concrete admixture and to achieve the right flow properties, strength, and reduced water permeability of the concrete.





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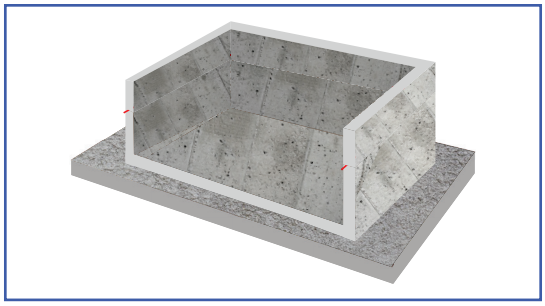
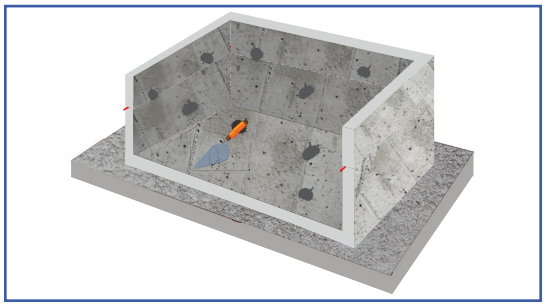
Step 3: Application of Swellable bar in the retaining wall joint.

Incase if it is not possible to pour the raft and the retaining wall in one go, it is recommended to lay the retaining wall to at least 3 to 4 feet above the raft floor level. It is recommended to lay **Ressi Swell Bar Pro 60 (Swellable bar)** over the joint between the retaining walls (For further information on how **Ressi Swell Bar Pro 60** is applied, please refer to the product Datasheet). Once the application of **Ressi Swell Bar Pro 60** has been done, the remaining retaining wall should be poured with the addition of **Max Flo Integra 3 (Powder)** in it.



Step 4: Repairing of the concrete defects using patch 365 Plus.

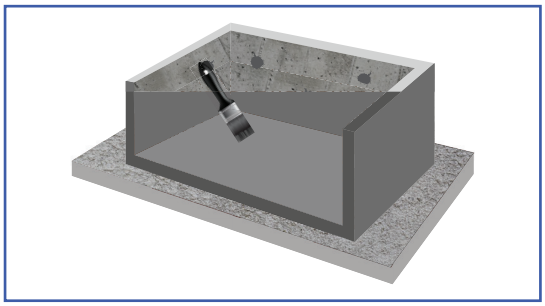
In principle after concrete de shutter of the raft and retaining wall there should not be any defects within the concrete. Once the formwork has been removed. It is essential to repair all the defects of the concrete with **Patch 365 Plus**, it is a suitable repairing material for the minor concrete defects and the voids created by the metal strips (Incase wooden formwork has been used). Once the concrete is repaired and of a sound nature subsequent treatment of various waterproofing materials can be done over the concrete surface of the underground tank.



Step 5: Application of Water Guard Crysta Coat 101 over the surface of the concrete both internal & external.

Water Guard Crysta Coat 101 is a high end crystalline waterproofing slurry coat which is to be coated over the prepared concrete surface on all the exterior & interior surfaces of the underground tank. At least two coats of **Water Guard Crysta Coat 101** are recommended in right angled patterns.

If the first coat is applied in top to bottom pattern the second coat should be applied in left to right patterns. It is recommended to make sure that all the concrete that has been casted internally and externally is coated properly with **Water Guard Crysta Coat 101** (For further application guidance, please refer to the product datasheet).



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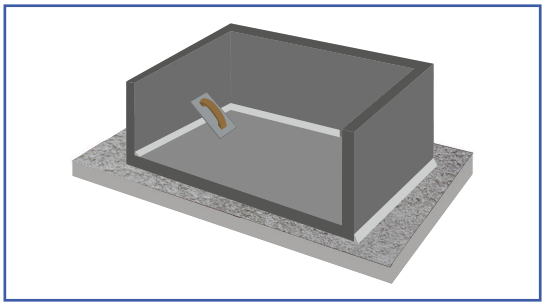
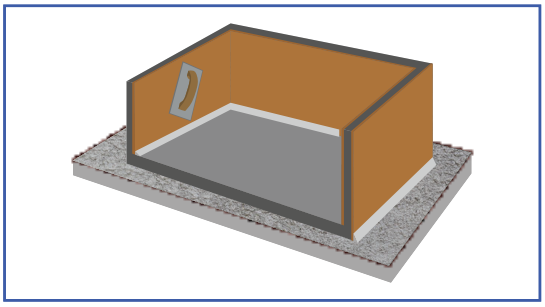
Step 6: Making external & internal chamfers between the raft & the retaining walls using Patch 365 Plus.

It is recommended to use **Patch 365 Plus** to make the chamfers between the external and internal walls of the raft and retaining walls. The chamfers should be at least 6 inches wide and should cover all the intersection of the external and internal raft and the retaining wall area of the underground tank. **Patch 365 Plus** is a two-component cementitious high strength repair mortar; due to its high strength and durability it is an ideal material to be used for the making of chamfers in this case. Please refer to the product datasheet for further information.



Step 7: Plastering of all the areas of the basement with the addition of Ressi SBR 5850 & Silmix all over the concrete internally & externally.

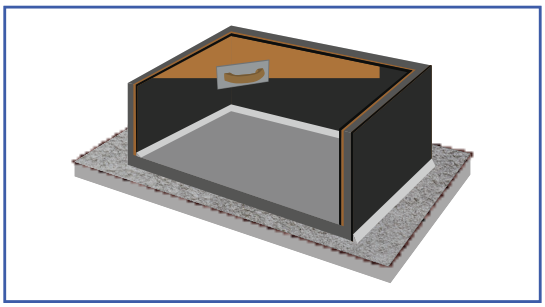
Once all the chamfer work has been properly executed, the inner & outer surfaces of the underground tank should be ready to plaster. It is recommended to use **Silmix** and **Ressi SBR 5850** as mortar admixtures to make sure that there are no cracks in the plaster & the plaster itself is water repellent. It is recommended to add 1 Liter of **Silmix** along with 1 Ltr of **Ressi SBR 5850** with every bag of cement used for the plastering of internal & external areas of the basement. It is to be ensured that the external & internal plaster of the underground tank should be finished slightly rough, exposing some grains using a foam (Foam finish plaster). This will provide a good key for the subsequent coating of **Water Guard 491**.



Step 8: Application of Water Guard 491 on the external and internal plastered surface of the underground tank.

Once all the internal and external plastering works have been completed, it is recommended to apply at least 2 coats of **Water Guard 491** in all the external and internal areas of the underground tank. It is recommended that both the coats are applied in opposite right-angled directions.

If the first coat is applied with vertical brush strokes, the second coat is to be applied with horizontal brush strokes. (For further application and mixing guidelines of **Water Guard 491**, please refer to the technical datasheet of the product).



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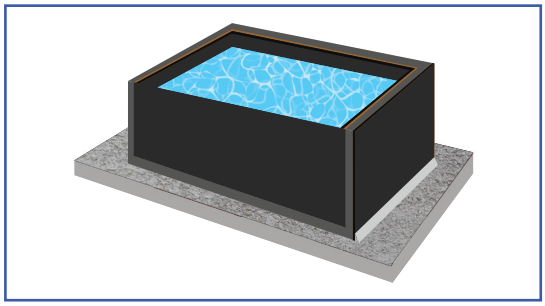
Step 9: Flood Test of the underground tank.

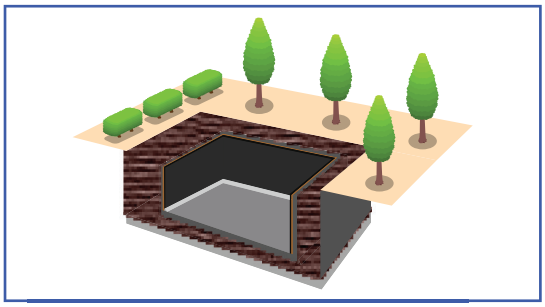
Once the coating of **Water Guard 491** has been completed and it has been dried out completely, it is recommended to fill up the underground tank with water to check for any leakages within the tank.



Step 10: Final inspection & back filling.

Prior to back filling of the underground tank, it is essential to have a final inspection of the underground tank and make sure that there are no spaces which have been left uncovered with any type of chemical treatment as previously explained in this system. If there any voids within the underground tank they should be properly addressed and made sure that it is watertight prior to back filling.

Note: In the entire process from excavation to the final finishing of the external retaining wall, it is to be ensured that there is constant dewatering of the underground tank area.



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