
TECHNICAL NOTES FOR FARM POND PREPARATION

PREAMBLE:

The Primary function of Geomembrane applied in Ponds/Reservoirs is to prevent loss of water due to seepage. The successful performance of Geomembrane is based on a good quality material, Installation & appropriate design of ponds/reservoirs.

To improve the service lifetime of Geomembrane it is essential that the Geomembrane are placed on the pond /reservoir surface according to the dimensions & contours of the pond/reservoir ensuring full contact with the sub grade. To achieve this onsite laying, joining & fixing is imperative.

✓ **SITE SELECTION**

- The selected site should be free from hard rocks/Murram, a natural water source, Mountain etc.
- The Proposed site should be free of any decomposable Organic materials/vegetation as it can result in upliftment due to generation of gases beneath the Geomembrane.
- The Site selected for pond/reservoir should not be within the path so that, it obstructs or the flow of the natural course of the water, rain fed Nalla, or a stream as well as in the pathway of concentrated surface runoff from the hills or elevated grounds upstream of the pond/reservoir, as there are chances of underground seepage of water into the pond/reservoir & Geomembrane is subjected to upliftment.
- The proposed pond/reservoir site should not be Natural Pit, a Well or Stone Mines.

✓ **DESIGN & SUBGRADE PREPARATION:**

- The Excavation of the pond /reservoir should be done by means of a JCB or Pock lain Machine.
- The Slope to Bed ratio (V: H) should be 1:1.5 minimum.
- The bunds constructed should be stable, as the unstable bunds will collapse resulting into tensile or tear failure of Geomembrane.
- The Top Width of the bund should be at least 1.5 meter wide.
- Sub grade surface should be leveled and made free of undesirable angular & sharp fragments, foreign & organic matter, stones & pebbles, as the presence may lead to cause pinholes & or puncture the Geomembrane.
- Soil sterilization may be necessary to kill roots certain types of grasses by using an effective sterilant/ chemical, however the sterilant or the chemical used should not be detrimental to the liner & shall be applied in accordance with the Geomembrane manufacturer's recommendations.

- The Bed & Slopes of the constructed pond/reservoir shall be inspected for burrows of crab's rodents etc. All such burrows shall be emptied by removing the crabs & rodents & disposed off to a safe site away from the pond/reservoir site.
- The empty burrows & potholes (Cavity between the stones) on the bed/slope of pond/reservoir should be filled with soil. Thereafter it should be compacted and the entire area should be cleaned & leveled. The entire area should be uniform & smooth.
- A Layer of soft soil should be applied & the top layer of soft bed & slope should be compacted by water showering at least 90% of proctor density by vibro compaction equipment, by any other suitable equipment or manually.
- The compaction should be achieved at least up to a depth of 300 mm from the final sub grade level of inside of the pond.
- Perfect compaction and leveling of Bed and Slopes will give good support to the Geomembrane.
- Inlet & outlet structures should be properly designed; faulty design & construction of inlet & outlet structures shall result in flooding or overtopping of embankments damaging the Geomembrane.

✓ **ANCHOR TRENCH:**

For the Purpose of Anchoring the Geomembrane an Anchor trench of 1' X1'X1' should be excavated at a distance of 80 to 100 cm away from the inside edge of the top of the embankment.

Rounded corners should be provided in the trench to avoid sharp bends in the Geomembrane. It is imperative that the Anchor trench is complete in all respects before lining work is undertaken to ensure the speed of lining and schedule.

The Anchor trench should be back filled after filling the pond, till then filled sand bags should be kept as counter weight.

INSTALLATION OF GEOMEMBRANE:

- Before starting the Geomembrane Installation the site conditions should meet all the above mentioned requirements, to enable to commence Geomembrane installation work.
- Chain Linked Fencing should be put around the pond/reservoir to prevent stray entry of men & animals to protect any damage to the Geomembrane.
- The Installer shall send a trained technician along with an assistant to install the Geomembrane at site.
- During installation the owner of the pond should provide all necessary equipments, such as a plywood, electricity point, cables 2 core, Sand bags for counter weight etc.

- Unskilled labours required for Geomembrane handling should be provided at site.
- Installation of the Geomembrane will be done according to the guidelines & methods set by the Installer.
- The Owner of the Farm Pond should not insist the technician to make any changes in the Installation process or insist for tight fitting of the Geomembrane.
- The Owner shall check all the Seams in presence of the Technician, & report any faulty seam observed & get it repaired.

POST INSTALLATION PRECAUTIONS:

1. The pond should be filled as soon as possible after installation work to ensure that the Geomembrane fully adheres to the sub grade surface.
2. The Geomembrane shall be loosened from the Anchor trench wherever it is found to be stretched, after filling the pond
3. The Inlet pipe through which water intake is being done in the pond where water falls continuously at a particular area, such point should be fixed with an extra piece of Geomembrane to avoid damage at that particular point due to force of the drop.
4. A shade net should be laid at corner of the pond. There are chances of some reptiles entering into the pond, in spite fencing. These reptiles can't come out of the pond as they cannot crawl on the Geomembrane. Hence to prevent damage to the Geomembrane, shade nets should be installed at the corners over the Geomembrane.
5. If a Submersible pump is used to draw the liquid from the pond than an antivibration mounting or a float should be used under the Submersible pump.
