

Sealing Ma'ayan Zvi Water Reservoirs (No. 1 and 2)



The Challenge

Sealing the Ma'ayan Zvi water reservoirs was carried out for the Jewish National Fund (KKL).

The surface area of each of the reservoirs is roughly 280 dunam (70 acres) with a capacity of approximately 2 million m³.

These reservoirs store purified effluent and also accumulate storm water runoff during floods. The accumulated water is designated for agricultural irrigation for the villages in the area.

Sealing the reservoirs was designed to prevent water loss due to seepage into the ground water.

The Solution

The solution chosen in order to prevent water seepage was the sealing of the reservoirs with geomembranes – H.D.P.E type sealing mats manufactured in Israel by **Ginegar Plastic Products LTD.**

The use of H.D.P.E membranes to seal reservoirs has a proven cost to benefit ratio, and has been used in numerous projects in Israel over the past 20 years.



H.D.P.E type sealing mats are resistant to UV radiation. The membranes excel in particularly high mechanical and chemical resistance.

The Execution

- ◆ The preparatory work included:
 - ◆ Leveling and smoothing of the surface designated for sealing and landscaping it with the required slopes and embankments.
 - ◆ Excavating the anchoring channels for the mats.



ADMIR PROJECTS

Geotechnical solutions in civil engineering

www.admir.co.il

- ◆ Deployment of the membranes on the interior walls of the reservoir and on the bottom was carried out using a special deployment device, including embedding the edges of the sealing mats in the anchoring channel.
- ◆ The join to the concrete structures was executed by means of polyethylene profiles which were fixed to the concrete surfaces during pouring.

The Results

Sealing of the two reservoirs was carried out one by one, meeting particularly tight time schedule (about 3 months work), so as to complete the sealing work before the rainy season.

Over 5,000 m² of sealing mats were deployed each single workday.

During the course of the work and upon completion, air pressure tests were conducted, as well as other field testing.

All the seams were tested and successfully passed the tests.

Since the completion of the deployment of the mats, these reservoirs have been used, as stated, as reservoirs for effluent that accumulate and store rain water without leaks and/or water seeping in the ground.

Thanks to the sealing, both reservoirs together supply over 12 million m³ of water for agricultural irrigation use by local farmers, and also contributes to alleviating the problems in the water supply in Israel.



- ◆ **Customer – Jewish National Fund, Water Association Hof HaCarmel**
- ◆ **Design – Kibbutz Eyal Engineering Office**
- ◆ **Supervision – N. Liderman**
- ◆ **Execution – Admir Projects, 2009**



ADMIR PROJECTS

Geotechnical solutions in civil engineering

www.admir.co.il