

UNDERGROUND WATERPROOFING - WATERTIGHT BASIN

1. BASIC PRINCIPLES

- The penetration of water and humidity in building materials causes huge damage, i.e.:
 - Corrosion and weathering.
 - Chemical corrosion and oxidation of the concrete steel reinforcement.
 - Create rashes and spots.
 - Growth of flora, lichens and fungus.
- Most of the above are derived from the direct effect of moisture, along with the physical and chemical properties of water and the corresponding building materials. Another aspect is the significant increase of water volume (10%) from the effect of frost, when converted from liquid to solid form. The disastrous effect of frost is due to each material's porosity and the quantity of water that has already been absorbed.
- For the effective protection of the building's foundations, when the horizontal water table is at the same or higher level than the foundations of the buildings, or there is vicinity with the sea, it is recommended the creation of a watertight basin using the **FLAG** synthetic membranes, produced by **SOPREMA**.
- The watertight basin creates a waterproofed cover of the building's foundation, until the ground's level.

2. APPLICATION (Fig.1)

- Before the application of the watertight basin, it is essential to create a drainage layer beneath the foundation (non-woven geotextile from virgin polypropylene fibers, weight: 200g/m², specific type **DREFON S200**, 40cm gravel layer).
- Then, a separating layer is applied with a polyethylene sheet and concrete cleaning layer, reinforced with steel mesh.
- Above the cleaning concrete, a coating of protective layer is applied with a non-woven geotextile from recycled polypropylene fibers, weight 500gr/m² **EDILFON FR500**.
- Further, a free placement of the synthetic membrane PVC **FLAGON BSL** is applied, 2,0mm thickness and the welding of the seams take place through a hot air welding device.
- Finally, a coating of protective layer of non-woven geotextile from recycled polypropylene fibers is applied; weight 500gr/m² **EDILFON FR500**.

WATERTIGHT BASIN DETAIL Construction Phase

1. SOIL REMEDIATION
2. CONCRETE
3. GEOTEXTILE EDILFON FR500 500gr/m²
4. UNREINFORCED PVC MEMBRANE FLAGON BSL 2.0mm
5. GEOTEXTILE EDILFON FR500 500gr/m²
6. PROTECTION SURFACE MADE OF CONCRETE
7. FUTURE FOUNDATION SURFACE

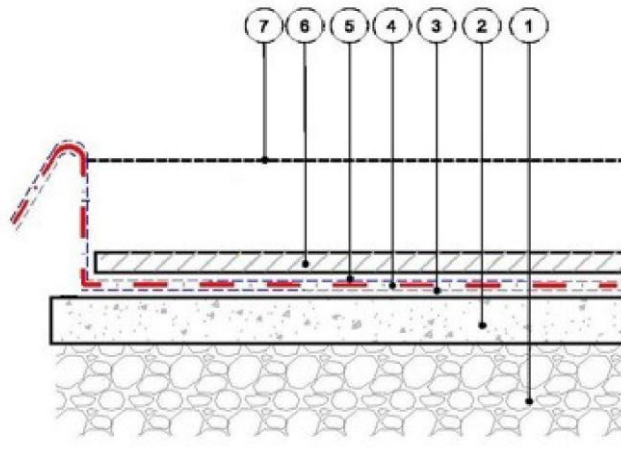


Fig. 1

NOTES:

1. The synthetic membrane and the bottom protective layers are protruded from the vertical elements at 0.5 - 1.0 m. in order to ensure their good welding with the relevant parts of the walls (Fig. 1).

On vertical surfaces (Fig. 2), a mechanical bonding is applied at the ground level and a free placement towards the bottom of a geotextile protection and synthetic membrane. The mechanical bonding of the membrane is applied with plasticized PVC blade, 5,0cm width. The welding of the seams follows with a hot-air welding device.

WATERTIGHT BASIN DETAIL

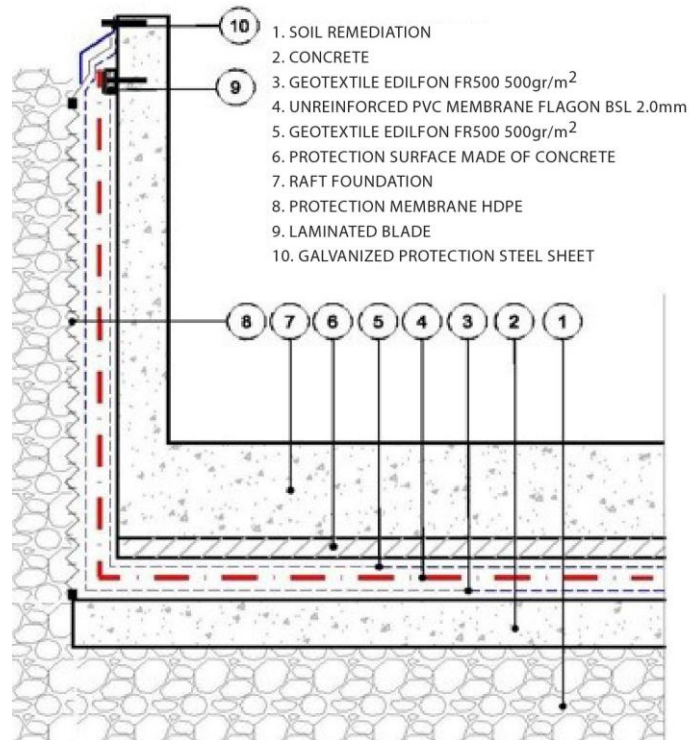


Fig. 2

The sealing of the watertight basin is applied at its end on the ground surface (bonding point in plasticized PVC blade) with polyurethane mastic.

Finally, a protective and drainage layer is placed above the geotextile protection, ensuring the additional protection of the waterproofing, either during the phase of earth backfilling (it has to be done separately with the appropriate materials), or the drainage of water towards the bottom's layer of gravel.