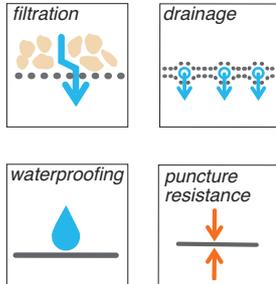




Building foundations, underground structures



Vertical drainage of underground walls

▲ the vertical drainage of underground walls shall be executed with a product of the **teradrain FDEP-BAT** type, a four-layer non-woven product comprising a filtering sheet, a drainage sheet, a 400 µm polyethylene waterproofing film protected by a protective sheet, and a network of regularly spaced 20 mm perforated mini-drains.

▲ the product shall have a filtration opening of 78 µm on the external filtering surface placed against the flat, graded and compacted substrate, supported at all points by the nonwoven draining core; the whole system shall be self-healing in the event of localized tearing.

▲ the waterproof surface protected on the top shall receive the slabbing concrete. The vertical drainage capacity of a mini-drain shall be 720 litres/hour. The circular shape of the mini-drains shall enable them to resist very high pressures of 900 kPa in the soil, and not collapse in the long term.

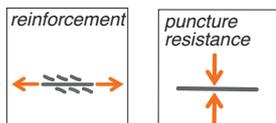
▲ the ultimate tensile strength of the product shall be 40 kN/m with a 45% elongation at break.

▲ the product shall be fastened at the top by a bead in the wall, and connected at the base to a main drain.

▲ the mass per unit area shall be 1050 g/m².

▲ the product must be sized by computation.

Pipeline protection and foundations



▲ pipeline foundation reinforcement, traditionally executed in natural materials, shall be implemented by the woven sheet of the **bontec Force SG** polypropylene type or HS polyester type, of tensile strength 80 kN/m, wrapped in ordinary materials available on site, for improved bearing capacity.

▲ the pipeline itself shall be protected by calibrated fine sand or by a 100% polypropylene, needle-punched, nonwoven geotextile sheet of appropriate width for the perimeter of the pipe or nozzle, such as **Bontec Protec VNW 800** of mass per unit area 800g/m² and dynamic puncture resistance 0 mm.

▲ the manufacturer, with ISO 9001 certification, shall have an engineering department capable of advising the designer and installer.