

Installation instructions for the RBSO® drainage system

Inspection steps:

1. Ensure that the delivered materials correspond with the order and that the RBSO® product is intact.
2. If required, the RBSO® should be temporarily stored in a dry space, protected from direct sunlight and freezing, preferably close to the installation location.
3. The installation personnel must be equipped with personal safety gear:
 - reflective clothing (EN471), helmet, protection shoes and goggles. When operating on a manlift, the use of safety a harness is mandatory.
4. The installation personnel must be familiarized to installing the RBSO® drainage system.

Installation procedures:

1. Install the RBSO® to designated and marked spots.
2. Begin the installation by drilling \varnothing 6 mm and 40–50 mm deep holes in the rock-face. For the starting end, 4–5 holes should be drilled. Drill holes on each side to hang the top part of the drainage system. Insert nails (5" galvanized steel) in the holes. The RBSO® can be attached on the correct/desired height by bending the nails.
3. Roll out the RBSO® starting the installation from the ceiling moving downward along the flooding points following the rock face. The RBSO® can be installed either from the middle to both directions, in which case the installation should be started from the ceiling and the midpoint of the RBSO®, or to one direction only, in which case the installation should be started from the ceiling and one end of the RBSO®. Place the RBSO® product such that the drainage pipe faces the rock-face. Drill more holes along the sides of the RBSO® product as you proceed with the installation. The maximum distance between the holes is 250 mm and 150 mm for extensions (Y-branches/-extensions). On uneven rock-face, the distance between the hanging points should be decreased such that the RBSO® product will be attached evenly against the surface. You can the install mesh wire as you proceed with the installation of the RBSO® product or after the installation is complete.

4. If there are minor leakages next to the RBSO®, the possible extensions should be connected to the RBSO® drainage system. If required, the drainage pipes should be connected to each other using extension pieces, such as sleeves. If extending the RBSO® or connecting RBSO®s to each other, the minimum overlapping distance is 300 mm.
5. Cut the RBSO®, that has been installed according to the plans, to the correct length. Cut the mesh wire as well. Use excess RBSO® to start a new RBSO® or for extensions.
6. Install the mesh wire using the same method as with the RBSO® product. The same nails can be used for the mesh wire where applicable. If extending the mesh wire, the length of the overlap should be 200 mm (or two squares of mesh wire). Normally, the mesh wire is made of annealed 3,4 mm-thick wire and its width is 800 mm.
7. The installation must be documented adhering to the provided instructions.

Quality assurance:

1. Check the installed drainage system for the following aspects:
 - The RBSO® has been installed where the flood water enters the rock cavern.
 - The overlaps are sufficient and the direction of the entering water has been taken into account.
 - The joints have been made such that the direction of the entering flood water has been taken into account.
 - The RBSO® is set evenly against the rock-face. Possible gaps should be filled with urethane.
2. All waste materials must be collected daily and recycled
 - Metal waste must be taken to a recycling point reserved for metals
 - Other materials must be taken to their designated recycling points and hazardous waste must be taken to a hazardous waste collecting point.