



K K Enviro Tech Pvt Ltd

formally known as KK Enterprises Environment and geotechnical solutions company

Case Study

Clogging and Chocking Protection of Water Intake

Owner: **Hindalco Industries Ltd.**

Location: Muri

Problem: The aluminum plant and its township are dependent on this water intake for supply of water. Therefore a water intake with 140 m of perforated pipeline was built a few years earlier. However, sand particles and pebbles entered the pipe line through the perforations, clogging it and cutting the water supply to a trickle.

Solution: The solution was to provide a geotextile filter over the pipe to prevent sand from getting into it. The filter had to have a large surface area to allow the required quantity of water to pass through. Further, it should continue to function even with partial clogging of the filter fabric and adequate factor of safety had to be maintained..

Process of works:

1. The choked pipe and gravel were removed from the existing infiltration gallery by an excavator.
2. The pipes and the perforations were cleaned properly by flushing with water.
3. Then the cleaned pipes were wrapped with Geotextile layer (Fibertex F-25). Each pipe was of 2.5 m length, 0.9 m internal dia and 1.0 m external diameter. The geotextile layer was stitched by a machine.
4. RCC foundation was provided at the bottom of the excavated pit.
5. Placement of one layer of geotextile (Fibertex F-25) at the bottom and sides of the pit was done.
6. Geotextile wrapped pipes were placed on the foundation with the help of the excavator. At the joint of two pipes one extra layer of geotextile was provided for complete wrapping of pipe line.

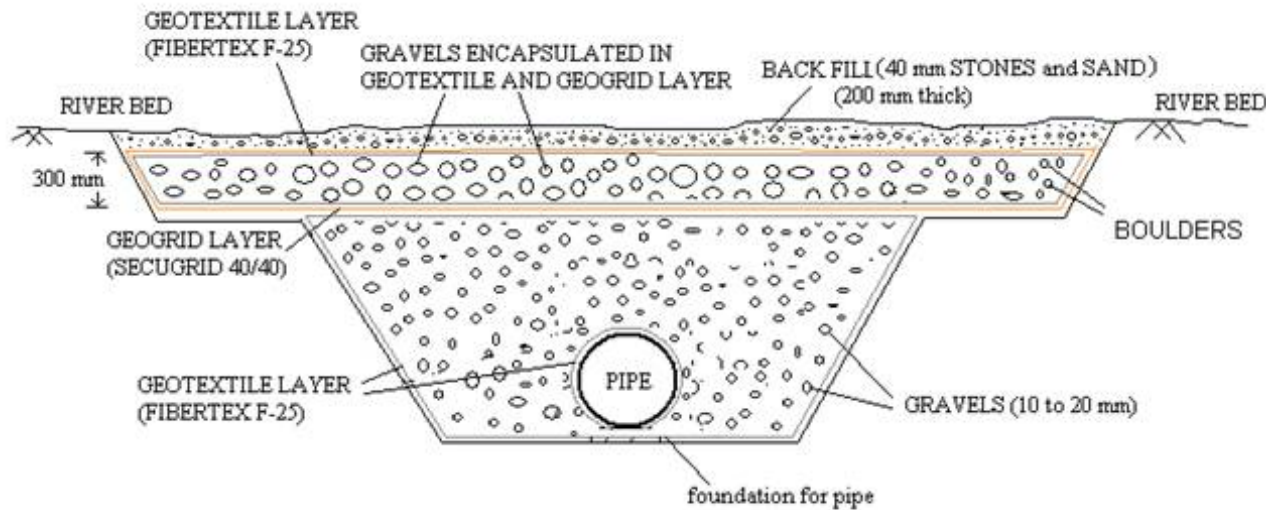


Installing geotextile wrapped around pipes



7. The pipe joints were sealed properly and the geotextile layer was stitched manually.
8. The pit was filled with 10 mm to 20 mm pebbles. Minimum of 500 mm thick filter media of pebbles were provided around the intake pipe.
9. After the complete filling, the bed geotextile layer was stitched at the top manually.
10. The top level of filtering pipe was leveled properly.
11. 3 m wide overburden layer of boulder encapsulated by geogrid was provided at the top. For this overburden layer, one layer of geogrid (Secugrid 40/40) was provided at the bottom. Then one layer of geotextile (Fibertex F-25) was provided on the geogrid layer. Boulders were then placed on the geotextile layer. The thickness of boulder layer was approximately 300 mm. Sand also provided on the boulders to fill the inter-boulder space. Then on the top the geotextile and geogrid layers were closed and stitched manually.
12. Sand was provided on the overburden layer not to expose the geosynthetic materials in direct sunlight.
13. At the time of installation, care was taken to keep the overburden layer under the river bed level.

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TYPICAL CROSS- SECTION OF GRAVEL PACK

Pipe covered with pebbles



Boulders for gabion mattress



after 5 months



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