

SELF-SEAMING PROPERTIES OF BENTONITE-GEOTEXTILE WATERPROOFING

Introduction

Bentonite-geotextile waterproofing membranes are characterized as a “self-seaming”. This means that panels of the membrane can be sealed to each other simply by overlapping adjacent edges a minimum of 4 inches (100 mm) and then confining the overlap to form the seal. The result is a contiguous waterproofing course around the substructure of a building.

How the Overlapped Seam Works.

The overlapped seam works by a combination of compression (in-situ confining stress) and expansion (bentonite). Figure 1 schematically shows these mechanisms provide a positive seal.

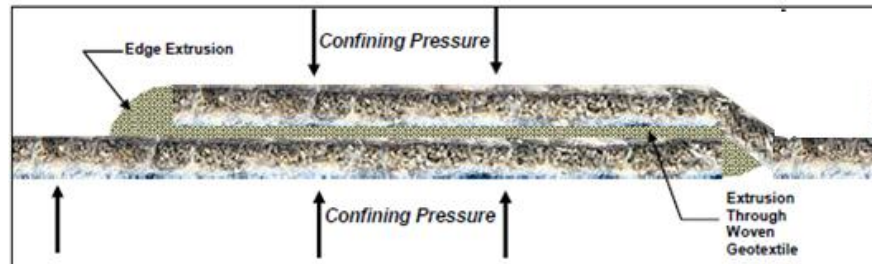


Figure 1. Schematic cross-section of overlapped seam

With respect to compression, all bentonite waterproofing products work best when confined between two relatively unyielding surfaces such as soil and concrete. In addition to enhancing the contact between the waterproofing membrane and the concrete, confining pressure also closes the overlap.

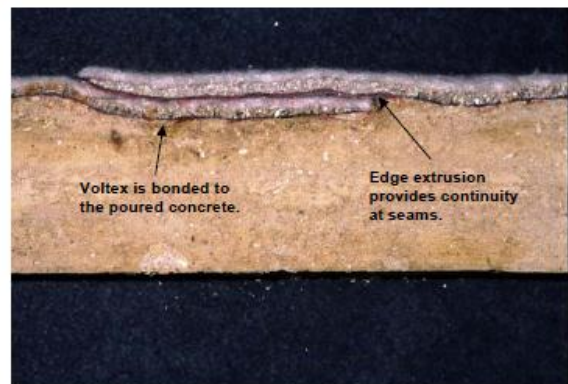


Figure 2. Cross section of overlapped seam after concrete is poured against it

Bentonite expansion and extrusion is the other mechanism by which Voltex self-seals overlaps. Extrusion occurs in two places—through the open edges of the membrane as well as through the open spaces of the woven geotextile. During the production process, the cut edges of Voltex are intentionally left open to promote this extrusion. During installation, the edge of the underlying panel meets the overlapping surface of the upper panel. In the presence of water, bentonite will expand and extrude out the cut edge to seal the seam. Bentonite extrusion also occurs through some of the small gaps between the yarn tapes of the woven geotextile. This expansion and extrusion of bentonite, in conjunction with the in-situ confining stress, provides a positive, watertight seal.