VT-125

ASSESSING THE CONDITION OF PREHYDRATED VOLTEX

Voltex is an active waterproofing product that "activates" upon contact with water. The bentonite component of the product swells and functions as a water barrier. It is important to consider whether the "unconfined hydration" of Voltex ('unconfined' meaning instances where the product is wetted before being covered with soil or concrete) requires the product to be removed and replaced with new materials. In most cases, material replacement is not necessary, and the Voltex will perform as intended regardless of its moisture content at the time of covering. The purpose of this document is to describe the conditions of prehydrated Voltex and to provide general recommendations so that a case-by-case decision can be made on the serviceability of hydrated Voltex.

The bentonite layer in Voltex is confined between two geotextiles which are uniformly needlepunched together to create a three-layer membrane and provide the product's structural integrity.

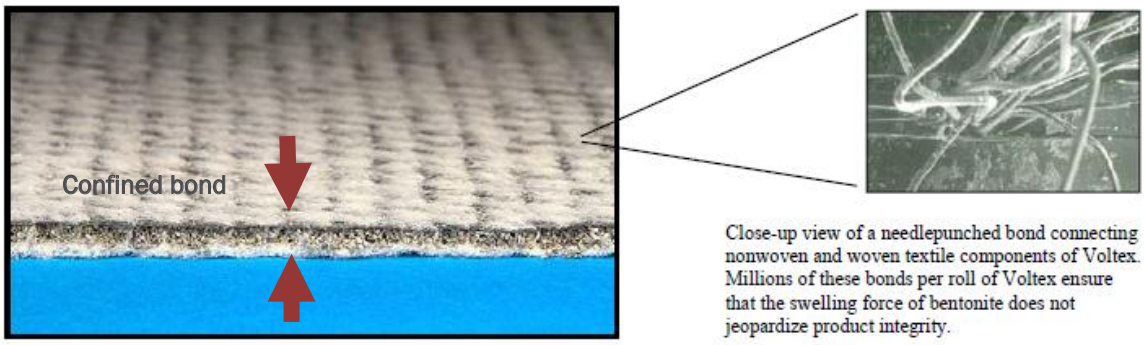

Figure 1. The needlepunched bonds connecting the two geotextile components of Voltex prevent the bentonite layer from excessive swell.

The needlepunched construction of Voltex, which provides a mechanical enclosure, confines the bentonite. Voltex can withstand unconfined hydration without losing its integrity. This is why it can be successfully deployed even in standing water for short periods without adverse impacts.

The robust construction of Voltex does not mean that CETCO recommends wet installation conditions. Instances of unconfined hydration should be evaluated on a case-by-case basis. For example, the duration of the exposure, the degree of hydration, and the bearing loads it will be subjected to during construction are all factored into a project-specific recommendation as to whether the prehydrated material can remain in place. When assessing whether to remove and replace any prematurely hydrated Voltex, an examination of the hydrated areas should be conducted in order to verify that:

1. The encapsulating geotextiles have not been separated, torn, or otherwise damaged.
2. There is no evidence that the needlepunching between the geotextiles has been compromised.
3. The Voltex does not leave deep indentations when it is walked upon.
4. The overlapped seams are intact and are not contaminated with sediment or construction debris.

If these conditions are met, then the Voltex can probably remain in place. Although it may contain more water than it would have under soil or concrete cover, this extra water will migrate out of the Voltex when consolidation occurs as normal loads are applied. Even if the Voltex is hydrated to the extent that bentonite would be displaced under foot traffic, it is possible to allow the material to air-dry such that bentonite is no longer fluid and cannot be displaced by concentrated loads. CETCO recommends that all standing water be removed from the material as soon as possible if it becomes submerged at any time during the installation process.

The above procedures will ensure that the Voltex will maintain its physical integrity if prehydrated. To assess the performance of hydrated Voltex, CETCO has evaluated Voltex specimens that have undergone a 30-day submersion period in water. The objective of these tests was to determine if the swelling pressure exerted by the hydrated bentonite could cause damage to the performance of the product. Test results indicate that neither the physical integrity of Voltex (as measured by its peel strength) nor its ability to adhere to concrete was negatively affected after 30 days of hydration. The 30-day test period was considered to be a worst-case exposure scenario. CETCO still recommends that standing water be removed as quickly as possible in order to ensure that the product will function effectively.

Premature hydration is an extremely common occurrence, and Voltex is designed to sustain it without compromising the performance characteristics of the product. In CETCO's experience, such cases are a rare exception and occur only as a result of prolonged hydration followed by direct vehicular traffic loads. Most instances of prematurely hydrated Voltex do not require removal or replacement of the product.

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