

In-situ Performance of Pre-applied Bonded Waterproofing Membranes at Contaminated Test Slabs

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Abstract : Pre-applied bonded membranes are used as positive-side waterproofing on concrete basements, are installed before the concrete work, and achieve a tear-resistant and waterproof bond with the subsequently placed fresh concrete. This bond increases redundancy compared to loose waterproofing membranes by preventing lateral water migrations in the event of damage. So far, the membranes have been tested in the laboratory, but it is not yet known how they behave on construction sites in the presence of dirt, soil, cement paste or moisture. This article, therefore, conducts investigations on six construction sites using 18 test slabs where the pre-applied bonded membranes are selectively contaminated or wetted. Subsequently, cores are taken, and the influence of the contaminations on the adhesive tensile strength and waterproof bond is tested. Pre-applied bonded membranes with smooth or granular but closed surfaces show no sensitivity to wetness, whereas open-pored membranes with nonwovens do not tolerate standing water. Contaminations decline the performance of all pre-applied bonded membranes since a separating layer is formed between the bonding layer and the concrete. The influence depends on the thickness of the contamination and its mechanical properties.

Keywords : waterproofing, positive-side waterproofing, basement, pre-applied bonded waterproofing membrane, In-situ testing, lateral water migrations

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